

**THE ROLE OF INFORMATION AND COMMUNICATION
TECHNOLOGIES IN HARNESSING INFORMATION FOR WOMEN
IN RURAL DEVELOPMENT: CASE STUDIES OF SOUTH AFRICA
AND KENYA**

BY

ALICE WAFULA KITUYI- KWAKE

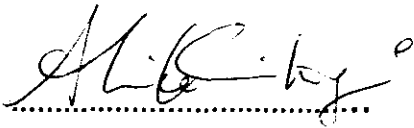
Masters in Library and Information Science (St Petersburg University,
Russia) 1983, Certificate in documentation techniques in computer
technology and information systems (Institute of Documentation, Rome)
1989, Certificate in Information Resources Management (University of
Wisconsin – Milwaukee) 1999.

**Thesis submitted in fulfillment of the requirements or the
award of the Degree of Doctor of Philosophy (Library and
Information Science) at the University of Zululand,
KwaDlangezwa,
South Africa.**

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DECLARATION

I declare that this study "The role of Information and Communication Technologies in harnessing Information for women in rural development: Case studies of South Africa and Kenya" except where specifically indicated in the text, is my own work and has not been presented for the award of any degree at any other university. All the information used has been acknowledged both in the text and in the references.

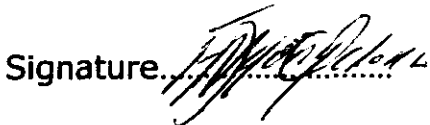


Alice Wafula-Kwake

10 July, 2007

Date

Approval



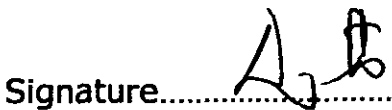
Signature

11 July 2007

Date

PRINCIPLE PROMOTER

Prof. D.N. Ocholla,
Department of library and Information Science
University of Zululand



Signature

17/07/07

Date

CO-PROMOTER

Prof. Matthew Adigun
Department of Computer Science
University of Zululand

DEDICATION

This dissertation is first and foremost dedicated to the Almighty God. *"Thank you Lord that you have shown me favour. The appointed time has come ". Psalm 102:13.*

To my beloved and beautiful daughter Helen, who has been by side throughout this period, and who without knowing it, has always inspired me and given me the strength to move on.

To my late father who has always had the faith in me and who never lived to see his dream come true.

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ABSTRACT

The purpose of this study was to investigate and identify ICTs that provide access to information, enhance quality of life, and improve the economic standards of rural women by conceptualizing a model for the development, management, exploitation and use of ICTs in an African rural environment. In order to obtain data from the respondents, two research methods were utilized, namely the case study and survey research. In the former, data was collected from key informants in organizations that work with ICTs and rural women. Using frame lists from both South Africa and Kenya, a total of four organizations were purposefully selected, i.e. Womensnet and the National Community Radio Forum (NCRF) in South Africa, and AfriAfya and the Arid Lands Information Network (ALIN-EA) in Kenya. The survey research method was used to interview women aged between 16 and 60 years. 400 respondents formed the sampling size, randomly selected from census household data. Survey data in Kenya was obtained from the subdivisions of the Kaplamai Division in Trans-Nzoia district, namely: Kimoson, Sinyerere, Siatunga and Makutano. The sample frame included: small-scale traders (68; 34%); housewives (29; 14.5%); educators/teachers (27; 13.5); farmers (26; 13.0); students (11; 5.5%); domestic workers (10; 5.0%); preachers (10; 5.0%); farm workers (6; 3.0%); large-scale entrepreneurs (5; 2.5%); nurses (4; 2.0%); clerical workers (2; 1.0%); and community development workers (2; 1.0%).

In South Africa, a similar sample frame included: small-scale traders (58; 29.0%); housewives/homemakers (48; 24.0%); farm employees (25; 12.5%); domestic workers (18; 9.0%); educators/teachers (16; 8.0%); students (15; 7.5%); entrepreneurs managing large-scale enterprises (3; 1.5%); clerical workers (9; 4.5%); community development workers (6; 3.0%); and two preachers (2; 1.0%). Sampling data was obtained from census household data belonging to

the magisterial districts of Umlalazi, i.e. Eshowe, Amatikulu, Gigindlovu and Mtunzini. By using the snowball sampling technique, female respondents directly and indirectly connected to one another were identified and consequently interviewed.

A few major recommendations stemming from the study include the need for: women to be involved in deciding which ICTs would directly and immediately benefit their lives; sensitization and training in the use of ICTS before project implementation; resource centers with skilled human resources and technological capacities to train communities about ICTs; more enhanced collaboration with rural women by being flexible and aware of their needs and requirements; collaborative efforts with other stakeholders at community level; the establishment of intermediary working committees at community level for enhanced communication processes; and a feasibility study that assesses the physical infrastructure and needs assessment survey before project implementation.

The study concluded that there is a strong co-relation between the levels of education of a community, types of ICTs used, information seeking behavior, and the socio-economic landscape/environment. It was also established that the enactment of a National Policy on ICT development does not guarantee the efficient and effective use of ICTs, especially by marginalized rural communities. Special efforts must be made to involve rural communities. These efforts would require policies that: encourage competition between various stakeholders in the telecommunications industry, govern the costs of ICTs, and govern connectivity in areas that are not commercially viable. As women form the majority of most rural households, special efforts need to be made in order to involve women in development initiatives such as skills enhancement initiatives, participatory mechanisms and follow-up programs.

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ACRONYMS AND ABBREVIATIONS

ACWICT	African Centre for Information and Communication Technology
AED	Academy for Educational development
AfriAfya	African Network for Health for Health Knowledge Management and Communication
ALC	African Lakes Cooperation
ALIN-EA	Arid Lands Information Network for East Africa
ANITEP	African Network of Information Technology Experts and Professionals
APC	African Policy Monitor
ARCC	African Regional Centre for Computing
ATU	African Telecommunications Union
CCUC	Centre for Cultural Understanding and Change
CBOs	Community Based Organisations
CCK	Communication Commission of Kenya
CDWs	Community Development Workers
CHAK	Christian Health Association of Kenya
CGE	Commission on Gender Equality
CSK	Computer Society of Kenya
CSIR	Council for Scientific Research and Development
ELIS	Every Life Information Seeking
DCNS	Digital Cellular Networks
DFID	Department for International Development
EASSy	Eastern African Submarine System
FAO	Food For Agricultural Organisation
FIDA	Federation of women lawyers
GCIS	Government Communication and Information System
GICT	Gender and Information Communication Technology
GSA	Government of South Africa

GDRCG	Gender Donor Roundtable Statement Consultative Group
GII	Gender Initiative Institute
HAWKNeT	The Horn of Africa Regional Women’s Knowledge Network
IBA	Independent Broadcasting Authority
ICASA	Independent Communications Authority of South Africa
IDS	Institute for Development Studies
IDRC	International development Research Centre
ITDG	Intermediate Technology Development Group
ITDG	International Technology Development Group
IBA	Independent Broadcasting Authority
ICASA	Independent Communications Authority of South Africa
ICIPE	International Centre for Insect Physiology and Entmology
ICRAF	International Centre for Research in Agriculture and Forestry
ILRI	International Livestock Research Institute
INFODEV	Information for Development Program
ISP	Internet Service Provider
ISSC	International Steering Committee
JAD	Joint Application Design
KACE	Kenya Agricultural Commodity Exchange
KBC	Kenya Broadcasting Cooperation
KPTC	Kenya Post and Telecommunication Cooperation
KZN	Kwa-Zulu Natal
LANS	Local Area Networks
MPCC	Multipurpose Community Centres
MDGs	Millennium Development Goals
NARC	National African Rainbow Coalition Kenya
NCRF	National Community Radio Forum
NCWK	National council of women of Kenya

NCSW	National Commission on the status of women
ODI	
OMCT	World Organization Against Torture
OECD	Organization for Economic Corporation and Development
PAR	Participatory Action Research
PDC	Participatory Development Communication
PRA	Participatory Rural Appraisal
PEST	Political, Economic, Social and Technological
PTO	Private Telephone Operations
PCOs	Public Call Offices
REFCOFTC	Regional Community Forestry Training Centre
RSG	Radio Sonder Grense (National Afrikaans programme)
RINAF	Regional Integrated Networks for Africa
SABC	South African Broadcasting Corporation
SAITIS	South African Information Technology Industry Strategy
SANGONet	South African Non-Governmental Organisation Network
SAT/WASC	South African-Western Africa Submarine Cable
SAFE	South African and Far East
SDLC	System Development Life Cycle
SKA	Square Kilometre Array
STST	Socio-Technical Systems Theory
STIN	Socio Technical Information Network
TELI	Technology Enhanced Learning Institute
UNDP	United Nations Development Programme
UNIFEM	United Nations Development Fund for Women
USA	Universal Service Agency
UIDP	Umlalazi Integrated Development Plan
VANS	Value Added Networks
VTI	Vivendi Telecommunications International
WANS	Wide Area Networks

WASC **West African Submarine Cable**
WSIS **World Summit on Information Society**

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Conceptual setting

Although definitions as to what Information and Communication Technologies (ICTs) differ widely, they do bear some similarities. Ngenge (2003:1-2), for example, defines ICTs as technologies that enable the handling of information and facilitate different forms of communication *between human actors, between human beings and electronic systems, and between electronic systems*. He groups the technologies into five categories, namely: (a) capturing technologies that collect and digitize information, such as keyboards, mice, voice recognition systems, bar code readers and image scanners; (b) storage technologies, such as: magnetic tapes, floppy disks, hard disks, optical disks (such as CD-ROMS), and smart cards; c) processing technologies, which create system and applications software and communication media such as fibre optics, cellular phones, and fax machines; (d) communication technologies that produce devices and networks which transmit information, such as Digital Cellular Networks (DCNS), Local Area Networks (LANS), and Wide Area Networks (WANs) such as the Internet; and lastly, (e) display technologies, which create a variety of output devices for the display of digitized information, such as display screens for computers, digital TV sets, digital video discs, printers, voice synthesizers and *virtual reality helmets*. A fairly authoritative definition of ICTs is provided by The European Commission (2001:3), which states that ICTs include "a wide range of services, applications and technologies, using various types of equipment and software, often running over telecommunications networks." The EC enumerates such technologies to include "well-known telecommunication services such as telephony, mobile telephony and fax. Applications include video-conferencing, teleworking,

distance learning, management information systems, and stocktaking. Technologies can be said to include a broad array ranging from old technologies such as radio and TV to new ones such as cellular mobile communications. Networks may comprise of copper or fibre optic cable, wireless or cellular mobile links, and satellite links. Equipment includes telephone handsets, computers and network elements such as base stations for wireless service. Software programs are the lifeblood of all these components, the sets of instructions behind everything from operating systems to the Internet." The EC sums it up when it states that "ICTs are enabling and facilitating technologies. Individuals, community groups, business or government departments with access to affordable communications and computers can use them to save time and money and improve the quality of their work or home lives".

The benefits of ICTs are difficult to gauge in most African countries, particularly in the wake of poverty, hunger and disease. The United Nations Commission on Science and Technology for Development (UNCSTD) acknowledges the predicament that most African nations face, but warns of further isolation if priority is not given to ICT strategies. UNCSTD (in Marcelle, 2001:1) stresses that "ICTs do not offer a panacea for social and economic dislocation, and this may lead policy makers to give lower priority to the need to create effective national ICT strategies. However, on the basis of the evidence, it is apparent that the risks of failing to participate in the ICT revolution are enormous. Failure to give priority to ICT strategies that enable developing countries and countries in transition both to develop their national infrastructures and to join the GII (Global Information Infrastructure) will exacerbate the gap between rich and poor. There is a growing need to evaluate the social and economic impacts of ICTs and to create opportunities for capacity building that will ensure their beneficial use and absorption within national economies and civil society."

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It is therefore important to question whether or not ICTs can, indeed, alleviate poverty and improve human conditions, especially amongst rural African women. Needless to say, views on the role and usefulness of ICTs in African development initiatives are diverse and occasionally contradictory. For instance, Kenney (1995) argues that access to ICTs is dependent on education and income distribution, while Moyo (1996) stresses the inevitability and pervasion of IT in all sectors of the economy. Some authors, like Chowdhury in Adeya (2002:1), are of the opinion that "the poor cannot eat high-speed Internet", while others like Barlow in Adeya (2002:1), maintain that "Africa should skip industrialism entirely and leap directly into the information era".

Generally, viewpoints on the role of ICTs in rural development can be grouped into four major categories, namely: political, economic, social and technological (PEST).

Economic implications primarily focus on the importance of science and technology (Basson: 1996). Basson stresses the need for African governments to utilize science and technology and compete in commerce and industry. This is in keeping with Rathgeber (2000), who identifies poor infrastructure - including telecommunications infrastructure - and the lack of skilled manpower as Africa's major challenges. Rathgeber observes that newly industrialized Asian countries took on this challenge and offered foreign investors both skilled labour, and an excellent infrastructure. In 1995, ICTs accounted for more than 25% of all exports from East Asian economies (Crede and Mansell in Rathbeger, 2000:3). According to the World Bank (1998/99:20), this capacity for ICT production has immensely contributed to East Asian economic growth. The World Bank further asserts that the 'knowledge gap' in many developing countries is a contributory factor to poverty. According to their report, there is no better way to bridge this divide than through the use of ICTs. Due to their ability to decouple or separate information from its physical repository, ICTs are excellent

channels of communication. This view is supported by Pohjola in Bedi (1999:4), who argues that this decoupling characteristic is 'revolutionary', as large bodies of information can be accessed by individuals, irrespective of time and space. Bedi (1999) adds that the use of ICT networks enables e-mail access to a vast number of individuals.

One of the most innovative breakthroughs of the 20th Century was the Internet, whose effects are changing how traditional technologies are used, and how wireless technologies are deployed. According to Marker, Wallace and Macnamara (2002:14), the Internet dramatically reduces the costs associated with making information available to others and accessing global information and knowledge resources. The authors further add that satellites and other advanced technologies make new things possible, e.g. recent innovations in hand-held devices, in mobile telephony, and in satellite communications have led to cutting edge information and communication tools specifically relevant to the needs of the poor. In some developing countries, rural health workers are now using small hand-held devices to record health data from their clients.

The social implications of ICTs are also highly regarded. Studies by Marker, Wallace and Mcnamara (2002:9-13) maintain a positive approach towards the role of ICTs in development, and affirm that ICTs do in fact have an impact on the standards of living and on poverty alleviation at various community levels. Examples of ICT access by the African rural poor in addressing their information needs are largely drawn from health, agriculture, community mobilization, and education and training.

When citing political implications, a narrative by Mudhai (2004:2-4) in the World Summit on Information Society (WSIS) held in Geneva, Switzerland, underscores the importance of ICTs in uniting African countries in development. Mudhai reflects on the latest developments initiated by African governments to leap into the 'information age' and gives examples of

achievements in Nigeria, where there is an increase in fixed telephone lines from 300,000 to 720,000, and a rise in mobile phone subscribers from 500,000 to 2.5 million over the last two years. Other examples, provided by Mudhai, are: Egypt, which stresses the importance of the E-Africa Connection project with NEPAD; and Mozambique's and Rwanda's Heads of State, who reiterate that Africans have gone beyond the dilemma of choosing between ICTs and other development priorities. Mozambique has established a high-level multi-sector task force for ICTs, while Rwanda (a landlocked country) has "an ambitious ICT programme" poised to make it East Africa's technological hub, with broadband fibre-optic and wireless access to all schools within three years. Equally encouraging is Botswana, which is investing in ICTs as an imperative industry with the proposed US\$ 300million East African Submarine Cable System (EASSy). This cable system's intended docking points are situated in Kenya, Tanzania, Uganda, Mozambique, Madagascar, Djibouti and South Africa. All these efforts are no doubt a step in the right direction for Africans, as ICTs can and will provide a new window for Africa to accelerate sustainable human development, which would inherently benefit rural women.

1.2 Contextual setting

Varying definitions exist with regard to the phrase 'sustainable development'. Meena (2006:1), for instance, defines sustainable development as "a process which enhances peoples' capacity to create and consume wealth on a lasting basis". The author further states that "sustainable development requires a socio-economic, political and cultural environment which enables people to engage in and sustain the development process". Alternatively, authors such as Badri (2006: 2-4) argue that sustainable development is not a holistic, indivisible concept, but an amalgamation of seven main indicators, i.e.: social development, economic development, environmental development, political development, intellectual development, women's development and international

development. The author further notes that these indicators can be subdivided in order to include other variables. For instance, the social development indicator covers areas such as education, health, shelter, employment, transport, energy and water. By eliminating illiteracy and enrolling all children of school-going age, improving the quality of education in terms of the student-teacher ratio, ensuing training in various skills, and opening up various educational facilities to those outside the school, a nation contributes towards development. Similarly, by decreasing infant and maternal mortality, increasing life expectancy and combating killer diseases in adults, a nation nurtures a healthy population. Subsequently, the variable 'shelter' could include the availability of toilets, cooking places and water taps in a household, the use of alternative energy for cooking and heating purposes, and the number of family members per room.

In his second indicator, i.e. political, Badri underpins the importance of peoples' right to life, movement, speech, and decision making. His third indicator is the intellectual rights of a people. The author stresses that people have the right to transparent information, and the accountability of rulers and leaders. Economic indicators are fourth, and denote food, security, increases in the Gross National Product (GNP), growth per capita income, and standards of living for all. Fifth, Badri cites environmental indicators of development, which include conserving forests, water resources and bio-diversity. The sixth indicator, i.e. women's development, incorporates being gender-sensitive and integrating the gender perspective into all programs and projects. Last but not least is the international indicator, which consists of a country's level of respect for borders, national sovereignty and abidance by international laws and treaties.

Johnston's definition (2002:1) is more acceptable today in development circles. According to Johnston, the concept of sustainable development originally made its appearance in the 1970's, and later through the Brundtland Commission of 1987. In the Commission's report, "Our Common

Future", sustainable development was defined as "development that meets the needs of the present without compromising the ability of the future".

Nevertheless, this study will adopt Badri's definition by virtue of the fact that it articulates some of the indicators necessary to measure 'sustainable development'.

1.2.1 Women in rural development

The significance of the role women play in development is crucial, given that women represent slightly more than half of Africa's population. However, it is lamentable that although these women are agents of production, growth and change, most are impoverished and live in economically deprived circumstances (Solange and Momo, 2005:2; Amoake in Soltane 2002:1; Adhiambo, 2001:1).

Huyer (1997) points to the colonialist and postcolonial focus on economically marginalized women, whose roles in reproduction, subsistence production and community management are not valued quantitatively or economically.

The HIV/AIDS pandemic and other diseases continue to plague many African countries, with counterproductive long term effects. According to a report by the Department for International Development [DFID] (2006:1), 55% of adult infections in sub-Saharan Africa affect women. For instance, the report indicates that South Africa has one of the highest HIV/AIDS prevalence rates in the world, with an estimated 5.6 million persons infected with HIV. Of these, 3.1 million are women.

Neglect in educational development has added to the inequalities that women face in society, due to inadequate educational facilities, resources and manpower, which are much less in rural areas. This view is supported by Huyer (1997), who claims that traditional African societies prioritised

education for boys, especially in situations where the family was unable to pay for increased fees in education. Authors such as Solange and Momo (2005); Ikoja-Odongo (2002a); and Adhiambo (2001), have also raised concerns that despite women being at the forefront of most economic activities, their contribution still remains undocumented. A consensus of opinion amongst the authors is that greater effort must be made to educate young females, as the education of future mothers strongly correlates with a reduction in infant mortality and malnutrition, and there is a positive relationship between a mother's education and reduction in fertility.

Nevertheless, the enrolment of both women and men has steadily approached parity over the past years, as Kenyan girls as well as boys are benefiting from free primary schooling policies. However, more needs to be done in order to enrol girls from arid and semi-arid regions in schools (GDRCG, 2005:3). More importantly, it is necessary to ensure that girls' secondary schools are sufficiently equipped with materials for subjects in science and technology. Notably, about 80% of the women at local universities in Kenya are enrolled in Arts related programmes (Adhiambo, 2001:4).

The Gender Initiative Institute [GII] (2004:1) records that in South Africa:

- 48% of all tertiary level students are women, but only 6% of all women in South Africa graduate from tertiary institutions.
- 9% of engineering graduates are women.
- 33% of technikon permanent educators are women.
- 31% of permanent staff in universities are female.
- Women comprise only 18.65% of data communications and networking jobs.

Khasiani (2000) also claims that an individual's lack of civic knowledge is worsened by fewer skills and less access to ICTs. According to the author,

this knowledge gap often results in voter apathy and failure to fully participate in the electoral process. The Gender Donor Roundtable Statement Consultative Group [GDRCG] (2005:3), for instance, points out that while the number of female parliamentarians doubled from 9 to 18 during the 2002 elections in Kenya, the figure was still well below the 50 percent women share in society.

Earlier editions by authors such as Adedeji, Rasheed and Morrison (1990: 173) have observed that political participation is a fundamental issue for women as it not only indicates their status, but also functions as a tool that improves their position in society. The authors observe that although poor rural women vote in high numbers, they have no power when it comes to making decisions regarding their welfare. To this end, the authors single out resources, time, skill, experience, patronage, and information, as major hindrances.

1.3 Statement of the problem

Poverty, and not ICTs, is the primary bottleneck to ICT development initiatives in most developing countries. According to the World Bank (2002) and Harris (2004:35), ICTs act as an amplifier of underlying processes, and what makes development function well, can be made to function better using ICTs.

One of the principle problems underlying rural development in many African countries includes issues of access and exclusion, which are still quite significant. As clearly illustrated by Bridges.org (2001), 'real access' to technology is one of the key elements necessary for integrating technology into society. In other words, is the technology in question available, physically accessible and affordable? Undoubtedly, questions surrounding availability, physical accessibility and affordability are areas of concern for

rural women of not only Kenyan and South African descent, but also rural women in many developing countries. Additionally, even if the information accessed is useful, development outcomes are often negligible as end-users do not have the capacity to act. For instance, market prices delivered to the rural poor are rendered useless given the poor physical infrastructure prevalent in many developing nations.

With the help of empirical data, this study intends to determine the extent to which these hindrances manifest themselves in the daily lives of rural women, vis-à-vis the use of various ICTs. The study also intends to suggest suitable development initiatives that could be undertaken in order to improve current situations. Similarly, through case studies, this study intends to portray practical examples currently being used in an effort to promote ICT access amongst marginalised rural women.

The arena of education is another stumbling block faced by most developing countries. A large percentage of rural women either have only basic primary education, or for that matter, no schooling at all. This impediment poses great challenges, particularly in project planning and the implementation of ICT related projects. As most rural women are still educationally disadvantaged, barriers to universal access are not only about the availability of telecommunications infrastructure and computing equipment, but also about barriers to individual access, such as those afforded by educational and socio-cultural backgrounds (e.g. technophobia). These barriers are further illustrated by Ballantyne, Labelle and Rudgard (2000), who argue that the use of ICTs is limited by lack of awareness, skills, training, a shortage of capital resources for sustainability and maintenance, and the low provision of appropriate content, both in terms of language and subject matter. Given that ICTs in most African countries span not more than three decades, there is little if any empirical data in relation to ICTs and the educational/computer literacy levels of rural women. In order to create a demand-driven ICT consumer community in the rural areas, these

hindrances to accessibility must be significantly reduced, either before or during the provision of the technology.

Subsequently, it is envisaged that this study will be able to reduce this gap by using the information gathered from the two countries (South Africa and Kenya) as a platform for strategic planning in projects that involve rural women and ICTs. In so doing, this study intends to determine not only the types of training and skills enhancement initiatives required, but also other participatory development initiatives that are necessary to promote rural community development.

The debate surrounding ICT policy is still wanting in many developing countries, as there is a lack of enthusiasm on the part of decision-makers to embark on ICT projects. Undeniably, ICT developments are dependent on a dynamic national ICT policy environment, the regulation of broadcasting licenses, and on the ensuing skills required to use and manage this industry. For instance, as opposed to South Africa, which does have a national ICT policy framework, the ICT policy debate in Kenya still awaits parliamentary approval after numerous years of trial, discussion and debate. To this end, the International Technology Development Group [ITDG] (2005) has expressed the view that women rarely contribute to the policy debate surrounding poverty as most are often illiterate, lack confidence and mobility.

By auditing and mapping the ICT infrastructure in both Kenya and South Africa, and especially amongst rural women, this study intends to suggest and recommend suitable mechanisms whereby ICT policies could be used to promote development amongst rural women.

1.4 Motivation of the study

This study is motivated by two fundamental needs:

- (i) To make a difference amongst the rural poor, particularly in African countries.
- (ii) To reassert that information is an invaluable resource and that "information is power".

Needless to say, most Africans live in abject poverty and in marginalized areas. Suffice to say that most of these rural poor are women, who could therefore be fittingly described as the "silent majority". These women are seen and not heard, as they are often illiterate and lack self confidence. In this respect, meaningful development in rural areas can only take place if these women are taken into account.

Having been brought up in the rural and farming environment of Transzoia District, the plight of these women is familiar. The average rural woman living in the heartland of marginalised areas can be seen trekking to work or the market place, alongside underdeveloped or sometimes non-existent roads. For those who can afford it, the available transportation system is in the form of a mini-bus or some similar (often over-crowded) vehicle. While some rural women are often seen cultivating land in the hope of providing food for their families, others are often seen in the market places trading small, petty merchandise with little profit margins. For shelter, most rural women live in dilapidated houses with no less than three children, and in poor sanitary conditions. The few fortunate enough to get employment, (often in clerical or teaching professions) earn small incomes, hardly enough to earn a living.

Unfortunately, these events are, by all appearances, unending, with no foreseeable solution. The question as to how, when, and what, are riddles that have to be solved by none other than Africans themselves.

As an information scientist, the need for technology when accessing, processing and disseminating information is of particular interest following these motivations. Every effort must be made to assist rural women with the access and use of information in their development pursuits. In other words, ICTs amongst rural women should enrich their daily lives as a matter of course, utilizing their efficiency and effectiveness.

1.5 Aim/Purpose of the study

An aim functions as an ideal, and indicates the direction of the research in question. Based on an aim, a study is able to translate and process a set of objectives. Broadly speaking, this study set out to investigate and identify ICTs that provide access to (and use of) information, enhance quality of life, and improve the economic standards of rural women, by conceptualising a model for the development, management, exploitation and use of ICTs in an African rural environment. As the study is a comparative analysis of Kenya and South Africa, this aim is conceptualised with the two countries in mind, although the accruing principals could be applied to rural set-ups in any African environment.

1.6 Objectives of the study

Objectives are specific steps used in order to find a solution to a given problem. They are derived from the aim or purpose of a study, and are by nature specific, measurable, achievable, realistic and timely. Additionally, objectives present the expected outcomes of the research study in question. Their role is to guide action.

As a result, objectives are precise statements of intended activities that the study utilises in order to achieve the set aims of the study, and must be

fulfilled within a specified time frame.

In order to achieve the stated aim, the study set out:

1. To explore, analyse and compare ICT development, policies and strategies in Kenya and South Africa.
2. To audit and map ICT use amongst women in Kenya and South Africa.
3. To identify the ICT information needs and e-services of rural women in areas such as health, education, agriculture, social welfare, entertainment, commerce, and industry, in both Kenya and South Africa.
4. To identify *obstacles faced by women when accessing and using ICTs.*
5. To analyse and determine the *ICT training needs of rural women in Kenya and South Africa.*
6. To develop and propose a conceptual model for ICT development and application for rural African women.

1.7 Research questions

This study combines both qualitative and quantitative research. In order to realise the objectives of the study, the following research questions were addressed:

1. Which national policies and strategies on ICT are in place in Kenya and South Africa?
2. How and where are national policies and strategies implemented in Kenya and South Africa?
3. What impact have ICTs had on rural women in South Africa and Kenya?
4. Which ICT resources are used by rural women and why?
5. What problems do women experience when accessing and using ICTs?
6. Which ICTs specifically serve rural women's information needs and in

what areas?

7. How do ICTs enhance rural women's social welfare and quality of life?
8. What are rural women's training needs in ICT skills?
9. How should national ICT policies and strategies that include marginalized areas and populations be implemented?

Please note that the full list of research questions used in the study is available in the index.

1.8 Assumptions of the study

Mugenda and Mugenda (1999:28) indicate that assumptions are expectations or suppositions that a researcher makes as a preamble to a study. Assumptions are not just the values and/or beliefs held by a researcher. They are useful during data analysis and when making conclusions (Ikoja-Odongo, 2002b:18). This study was based on the following assumptions:

1. Rural areas, particularly in Kenya, remain underdeveloped with poor infrastructure due to the lack of an integrated information and communication technology policy that could help create an enabling environment for improved social and economic welfare.
2. African countries are poor because women, the largest segment of the population that provides food and nurtures children, are marginalized in rural areas.
3. Most African rural women are illiterate and ignorant with regard to issues affecting their daily lives, live in poor conditions, and suffer high rates of infant mortality. Such prevailing conditions contribute to perpetual poverty in rural areas.
4. Rural women who have and use ICTs have better economic and social welfare standards than women who do not have and/or use ICTs.

1.9 Significance of the study

The importance of a study is judged by the contribution it makes towards furthering knowledge. This section discusses the study's significance from several viewpoints.

1.9.1 Contribution towards further research

The complexity of this sector to the Kenyan and South African economies requires a thorough understanding of the current status of ICTs, vis-à-vis rural women, in both countries. To this end, this study takes deliberate steps to audit and map ICTs in both countries and how rural women relate to them. *The study contributes useful data towards baseline studies in these areas, as the amount of data available is negligible.*

1.9.2 Increased understanding of gender, ICTs and development

This study sought to enlighten decision-makers, particularly in African countries, on important mechanisms needed to actively involve women in identifying and defining their information needs, and the choices and processes necessary to meet these needs, in order to encourage production and participation in community and rural development. This is even more so because the majority of those who reside in the rural areas of most African countries are women. For instance, according to the UIDP (2002), there were 53.5% women as compared to 46.5% men in the Umlalazi municipality.

Furthermore, Huyer (1997) and Huyer and Sikoska (2003) point out that women's access to ICTs and information cannot be taken for granted, especially in areas such as employment, education, training, and other productive and personal development areas in life. Huyer underscores the

main purpose of women in African society, which comprises marriage, reproduction and domestic duties; and how women move away from their families upon marriage while men stay at home with their wives and continue to contribute towards their family economy. Boys and men are therefore highly valued, and more investment is made in their education, health, and future income earning potential. Further remarks by the author indicate that the role of women in African society is not only markedly distinct from that of men, but also strongly defined by views held of a woman's capability, purpose and needs.

Concomitantly, as technology/tools are designed to accomplish a given task, there's a need to understand the social context of technology before and during project design and implementation. Hence, the social decisions in a *community based on gender, ethnicity, race, class and age must be clearly understood*, as each play an important role in the adoption rate of ICTs in a given community. This study underscores this form of analytical thinking. The study hopes to assist decision-makers in understanding how gender perceptions shape the design of technology, and how the environment determines how *men and women use technology. Women thus need to be motivated and mobilised in order to use ICTs.*

An expanded understanding of the power of knowledge and the role ICTs play therein is an important element of this study. The study will seek to show the mechanisms of promoting information access and use by women in arenas such as health, education, business, social welfare and agriculture.

The study also sought to show areas in which women can be empowered via the information revolution, for instance through training, skills enhancement, capacity building and participatory mechanisms.

1.9.3 Policy and decision making

Although positive steps have been taken by a country like Kenya towards the enactment of a National ICT Policy, there is a need to reactivate pending bills on women and their rights in society. These include bills such as the Affirmative Action Bill and the National Gender and Development Bill, 2000. The study will seek to enlighten decision-makers, particularly in African countries, on the urgency of enacting integrated national information policies, and also gender and development policies that promote economic and social development. To this end, comparisons between Kenya and South Africa will be made, and will serve as learning platforms for both countries.

The results of this study will be widely disseminated through conferences, journal articles and lectures, for research, policy making and learning purposes.

1.10 Scope and limitations of the study

The scope of a study consists of the area, extent or latitude a study can cover. In contrast, the limitation of a study takes into account the restrictions that are imposed on a study. These restrictions may either be internal (i.e. related to the person conducting the study) or external (i.e. imposed by the environment in which the study takes place). Restrictions could also stem from the type of study being conducted.

This section presents the conceptual scope, focus, research environment, time, and methodological frames of the study.

1.10.1 Conceptual scope

Most of this study is descriptive and therefore quantitative in its approach. However, the study also adopted/incorporated a qualitative approach.

1.10.2 Focus

The study focused on rural women and ICTs, and was interested in understanding the infrastructure and resource base of the environments in which the rural women of South Africa and Kenya live, and how this has affected their use of ICTs.

1.10.3 Research environment

In South Africa, the study primarily focused on rural women in the uMlalazi municipality, which is situated in Uthungulu District in the Kwazulu Natal province, and is mostly rural in nature (i.e. has only a few urban settlements). The region possesses more female inhabitants than male (Uthungulu District Municipality report, 2003). Umlalazi is located on the North Eastern coast of KwaZulu-Natal. The area is underdeveloped, although adjacent to the highly developed coastal corridor of the KwaZulu-Natal [KZN] province. The study purposefully selected uMlalazi municipality for analysis because of its rural nature, population density, and racial mix. Uthungulu District has six local municipalities, namely: Mbonambi; uMlathuze; Ntambanana; uMlalazi; Mthonjaneni and Nkandla (Uthungulu District Municipality report, 2004). According to the report, Uthungulu District has the third highest population in the province, after the Durban Metropolitan Council and the uMgungundlovu District. Umlalazi municipality has 26 wards [electoral areas represented by Councilors] (UIDP: 2002:4). Of these wards, seven were selected according to their individual population densities and racial mix. These included wards 11, 12, 13, 15, 16, 18 and 25 of the Umlalazi Municipality. Accordingly, in order to avoid bias during

selection, four wards were randomly drawn, producing: Eshowe, Amatikulu, Gigindlovu and Mtunzini.

In Kenya, Kaplamai Division in Trans-Nzoia District was selected for analysis due to its rural location, where farming and agriculture is the economic mainstay of its people. Kaplamai Division comprises eight sub-divisions: Kimoson, Motosiet, Sinyerere, Sitatunga, Makutano, Biribiriet, Kapsara and Kapolet. For the purposes of this study, the following four sub-divisions were randomly selected: Kimoson, Sinyerere, Sitatunga and Makutano.

1.10.4 *The Time Factor*

As part of a comparative study involving two countries, i.e. Kenya and South Africa, a sample size of 400 was deemed suitable, given that the study population in both countries was over 5000 (Gay's 1996:125). Additionally, the study had to take into account the [extensive] distances between the respondents in both countries. While bearing the purpose and objectives of the study in mind, every effort was made to minimise time and costs.

Time was restricted both in terms of scope and limitations. There were four years within which to complete the study. A detailed work programme, or research timetable, covering the years between 2003 and 2007 was agreed upon during the preliminary stages.

The main highlights of this period of time include:

1. Proposal preparation
2. Defence and approval
3. Auditing and mapping of ICTs in both Kenya and South Africa
4. Literature review on ICTs, gender and development
5. Development of the research instrument
6. Writing of the methodology

7. Field work, case studies, data analysis
8. Presentation, interpretation and thesis writing

1.10.5 *Methodological scope*

The survey method was used to collect quantifiable data from a cross-section of female members from the South African and Kenyan population. Additionally, both the case study method and the critical success factor method were used to help collect descriptive information about rural women and their use of ICTs. Historical research was also applied in order to collect, evaluate, explain and understand actions and events in relation to ICTs, gender and development.

1.11 Dissemination of findings

According to Ocholla (1999:141), possession of information without dissemination is useless, and research is not complete until dissemination is accomplished. The findings of this study will be disseminated to the CCK of Kenya, The Ministry of Information and communication [Kenya], and The Ministry of Research, Technical Training, and Technology [Kenya]. The findings will also be disseminated through seminars, conferences and workshops, such as those organised by the government of Kenya on ICTs, and also in local conferences in South Africa, such as Prolissa and Liasa.

In order to reach a wider audience, findings from this study have been disseminated through conferences and peer-reviewed journals. They include:

1. Kwake, A. (2004). Auditing ICTs for rural development in rural Kenya: case study of Kenyan rural women. [Online]. Available: <http://www.dissanet.com>

2. Kwake, A. Ocholla, D, Adigun, M. (2006). The feasibility of ICT diffusion and use amongst rural women in South Africa. *South African Journal of library and information Science*, 2006, 72(2), 108-118.
3. Kwake, A. (2006). Demystifying ICT diffusion and use amongst rural women in Kenya. [Online].
Available: <http://www.dissanet.com> (awaiting publication)
4. Kwake, A. (2006). Conceptualizing and Contextualizing Social Technical Systems Theory, Systems Theory and Info mobilisation. [Online].
Available: <http://www.dissanet.com> (awaiting publication)
5. Kwake, A. (2007). The feasibility of ICT diffusion amongst African rural women: a case study of South Africa and Kenya. *Paper presented at the Africa information ethics Conference: Ethical challenges in the Information age "The joy of sharing knowledge", 5-7 February, 2007.*
(awaiting publication).

1.12 Structure of thesis

Chapter One: Introduction and background of the study

Chapter one covers the introduction and background of the study. It provides the conceptual and contextual setting of the study, aims, objectives and research questions, scope and limitations of the study and its significance.

Chapter Two: Auditing and Mapping of ICTs in Kenya and South Africa and amongst rural women

This chapter discusses the state of ICTs in Kenya and South Africa, and amongst rural women.

Chapter Three: Perspectives on information needs, information use, communication and information seeking behaviour

In line with the objectives of the study, this chapter reviews literature drawn from both print and electronic sources

Chapter Four: Conceptualising and Contextualising Social Technical Systems Theory, Systems Theory and Info mobilisation

Chapter four discusses the concept of Info-Mobilisation within the confines of Systems and Socio-Technical Systems Theories, and how this can be applied to the study.

Chapter Five: ICTs, Gender and Development

Chapter five reviews literature related to the study, drawn from both print and electronic sources. This is done in line with the objectives of the study.

Chapter Six: Research design and methodology

This chapter covers the research methodology and design of the study. It discusses the survey research method, the case study method, the qualitative and quantitative approaches used, the study population, the sampling methods, and the data collection instruments used. Data collection procedures and data analysis are also discussed.

Chapter Seven: Data presentation and analysis

This chapter presents and analyses data obtained through the case study method and questionnaires.

Chapter Eight: Case studies

Chapter eight evaluates and portrays four ongoing rural ICT development projects in both Kenya and South Africa.

Chapter Nine: Discussion of the findings

This chapter discusses the findings by collating and comparing results from chapter seven and chapter eight. Information from document reviews is also included in the discussions.

Chapter Ten: Summary, Conclusions and Recommendations

Chapter ten provides the summary, conclusions and recommendations based on the findings of the study. Suggestions for further research are also presented.

1.13 Summary

This chapter has covered the conceptual and contextual setting of ICTs in development. ICTs are not only excellent channels of communication, but also facilitate access to a wide range of information resources in health, education, agriculture, business and trade. Notably, the African woman, who represents more than half of Africa's population, continues to face a myriad of obstacles. The rural African woman is educationally disadvantaged, lives in economically deprived areas, and is impoverished. Under these circumstances, very little if any development can take place. Hence, concerted efforts are required from all stakeholders to enhance the standard of living of rural women. This chapter has also briefly discussed: the statement of the problem; motivation of the study; aim; objectives and research questions of the study; significance of the study; and the scope and limitations of the study. The dissemination of findings and the structure of the thesis are also provided.

The next chapter (two) looks at the auditing and mapping of ICTs in Kenya and South Africa and amongst rural women.

CHAPTER TWO

MAPPING AND AUDITING OF ICTs IN KENYA AND SOUTH AFRICA

2.1 Introduction and Background Information

The aim of this chapter is to audit and map the ICT infrastructure in Kenya and South Africa, and also to account for ICT distribution amongst rural women in both countries. The chapter is based on two of the study's primary objectives, namely:

1. To explore, analyze and compare ICT development, policies and strategies in Kenya and South Africa.
2. To audit and map ICT use amongst rural women in Kenya and South Africa.

The chapter addresses the following research questions:

1. Which national policies and strategies on ICT are in place in Kenya and South Africa?
2. How and where are national policies and strategies implemented in Kenya and South Africa?
3. Which ICT resources and what infrastructure are found in the rural areas of Kenya and South Africa?
4. Where are these resources and infrastructure located?

Ellies et al (1993:134) are of the view that an audit of ICTs involves a systematic exploration, analysis, and description of ICT strategies, including the challenges encountered by the organization in harnessing these technologies. The authors illustrate that the objectives of a technology audit include determining infrastructure/systems needs, adequacy, integrity,

security, and cost effectiveness. In doing so, an organization is able to get a clear understanding of its strength and weaknesses.

By and large, an audit of ICTs in Kenya and South Africa therefore involves establishing the current distribution rate and infrastructure capacity, as well as an evaluation of the adequacy of ICTs in providing for the needs of rural women.

According to Ellies et al, information mapping constitutes the exploration of information needs and its utilization, and the graphical representation of part(s) of an information system. Through information mapping, an organization can effectively manage its information resources (Ellies et al, 1993:149). The mapping of ICTs, for instance, helps provide substantive analytical work and accurate statistics on the nature, types and distribution of ICTs (Adeya, 2001: 17). Examples of mapping strategies can be found in studies by Kiplang'at (2004), Majanja (2004) and Ikoja -Odongo (2002b).

Within the context of this study, mapping ICTs in both Kenya and South Africa involves taking stock of: **ICT services**, such as telephony and cellular/mobile telephony; **"old" technologies/broadcasting**, namely radio and TV; the use of and distribution of **telecommunications systems**, such as copper or fibre optic cable; wireless or cellular mobile links, satellite links and wide area networks (e.g. the Internet); and equipment, such as network-base stations for wireless service. This process is intent on critically analyzing these technologies in relation to the needs of the rural marginalized woman.

2.2 Mapping and auditing of ICTs in Kenya

2.2.1 Background on Kenya

Kenya sits along the East African coast, nestled between Ethiopia to the north and Tanzania to the south, and is about 240,000 square miles

(600,000sq. km). The population constitutes more than 31 million people and is made up of 70 ethnic groups (Frontline/World: 2004). This report also confirms that most Kenyans who live below the poverty line consist of women.

Opala (2004:4) observes that Kenya is generally an agricultural country that practices both modern and traditional forms of land use. Opala illustrates that during the period 1964-74, agriculture contributed towards 36.6% of Kenya's GDP, 33.2% in 1974-79, approximately 29.8% in 1980-89, and 26.2% in 1990-95. Opala further notes that the Kenyan agricultural sector still provides food for local consumption, substantial exports of tea, coffee, cut flowers and vegetables, and approximately 70% of total employment.

2.2.2 National Gender related Policies

According to Frontline/World (2004), women constitute 54 percent of Kenya's voting population, but occupy only 4 percent of its parliamentary seats, and 18 percent of its judgeships. Correspondingly, while eighty percent of Kenyan agricultural workers are women, they own just 5 percent of the land.

Although Kenya can be said to experience relative political stability, especially when compared to neighbouring countries, the World Organisation Against Torture [OMCT] (2003: 12) argues that the Kenyan society is a patriarchal society with widespread discrimination against women and a virtual absence of women in power, especially within socio-economic and political spheres. According to the OMCT, poverty and traditionalism remain serious hurdles facing women's equal rights in Kenya.

The OMCT further (2003:11-14) reveals that societal discrimination is most apparent in rural areas, where families are more reluctant to invest in educating girls than boys, especially at higher levels. According to OMCT,

issues pertaining to inheritance do not come before the courts because women are often excluded from inheritance settlements, particularly when married, or given smaller shares than male claimants. Moreover, a widow cannot be the sole administrator of her husband's estate without her children's consent, as most customary law negates women, particularly in property rights and inheritance. Under the customary law of most ethnic groups, a woman cannot inherit land, and must live on the land as a guest of male relatives by blood or marriage.

The GDRCG (2005:1) reiterate that although the National African Rainbow Coalition (NARC) government established the Ministry of Gender, Sports and Culture and the National Gender Commission, Kenya still lacks a guiding and comprehensive gender development policy. There are a number of pending bills waiting (all of which are related to the rights of women in society) for approval by parliament. These include: the Affirmative Action Bill; Criminal Law amendment Bill 2000; National Gender and Development Bill 2000; Equity Bill 2000; Domestic Violence (family protection) Bill 2001; and the Gender and Development Policy Bill 2000.

Some of the nation's most well known women's organizations actively pursuing women's rights are: Maendeleo Ya Wanawake (translated to mean Development of Women); FIDA (Federation of women lawyers); the National Council of Women of Kenya (NCWK); the National Commission on the Status of Women (NCSW); the Education Center in Democracy; and the League of Kenyan women voters.

2.2.3 National Information Policies

Waema (2006:1) reports that the development of a National ICT Policy has finally made headway after numerous unsuccessful attempts over the past 15 years or so. According to the Ministry of Information and Communications [MoIC] (2006:2), this policy seeks to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream gender in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT; and achieve universal access. *(Pls see insert of draft ICT Policy in the Index).*

The MoIC (2006:4) further indicates that ICT issues are currently considered under various legislations, including "The Science and Technology Act, Cap. 250 of 1977: The Kenya Broadcasting Corporation Act of 1988 and the Kenya Communications Act of 1998", which are *inadequate in dealing with* issues of convergence, electronic commerce and e-Government. According to the Ministry, there is need for a comprehensive policy, or legal and regulatory framework to:

- (a) Support ICT development, investment and application;
- (b) Promote competition in the industry where appropriate;
- (c) Ensure affordability and access to ICT nationally;
- (d) Address issues of privacy, e-security, ICT legislation, cyber crimes, ethical and moral conduct, copyrights, intellectual property rights and piracy;
- (e) Support research and development in ICT; and
- (f) Develop an institutional framework for policy development and review.

The MoIC (2006:3) illustrates further that the Government of Kenya first released the "Telecommunications and Postal Sector Policy Guidelines" in 1997. These guidelines paved the way for the enactment of the Kenya Communications Act of 1998, which repealed the Kenya Posts and Telecommunications Act and established:

- (a) CCK as the Telecommunications, Radio Communications and Postal Sector Regulator;
- (b) National Communications Secretariat (NCS) to serve as a policy advisory body;
- (c) Communications Appeals Tribunal;
- (d) Telkom Kenya Limited; and
- (e) Postal Corporation of Kenya.

2.2.4. ICT services

2.2.4.1 Telephone Lines and tele-density distribution

By mid 2002, the Computer Society of Kenya contends that Nairobi had 191,202 telephone lines and a tele-density of 7.92 per cent. The coast had 40,184 lines and a tele-density of 1.43 percent, Rift Valley had 35,590 lines and a tele-density of 0.45 percent, and the western region had 6,948 lines and tele-density of 0.18 percent.

Overall, the Computer Society of Kenya (2003) asserts that the number of connected lines in Kenya, had grown from 63,000 in 1977, to well over 300,000 in 2003. This could be translated to mean one telephone per 100 people. Although still a dismal figure, this tele-density fares better than neighbouring countries such as Burundi (0.40), Sudan (0.8), Uganda (0.35), and Tanzania (0.45).

Nonetheless, with only 10 telephone lines per 1000 people overall, and 77 per 1000 in the capital, Nairobi, Kenya's Gross Domestic Product (GDP) grew by only 1.5% in 2002 (World Bank: 2002). As maintained by the report, as long as limited telephone access continues, the gulf that divides developing nations such as Kenya from the developed world will continue to expand. In support of this view, Mutai, the African telecommunications union secretary-general underscores the fact that "there is no clearer way to eliminate the economic inequalities between humanity, than by facilitating communication and information flows" (Moore-King, 2000:41). By the same token, the IDRC (2005:2) contends that an acute lack of infrastructure in Kenya seriously limits opportunities for using ICTs for economic and social development.

Mudhai (2004) argues that Kenya has been slow to reform the ICT sector due to monopoly, corruption and under-investment. This has resulted in 200,000 to 300,000 fixed telephone applicants on the waiting list for up to six years. According to the author, this failure rate on 250,000 to 320,000 connected landlines is one of the highest in the world and has resulted in the escalation of charges for mobile phones and the Internet. The author also observes that the government is working towards establishing a master plan for e-commerce, and e-government strategies to make public administration more transparent, efficient and democratic. The author observes that the Government of Kenya (GoK) plans to spend US\$ 5.85 billion (Sh444.2 billion) by 2015 on:

- 1.4 million fixed telephone lines in the rural areas. This is translated to mean an average of 5 lines per 100 people, up from 1.6 per 100.
- 2.4 million fixed telephone lines in urban areas. This translates to mean an average of 20 lines by 100, up from 4 per 100.

In a recent move to liberalize and increase competition in the industry, the GoK plans to sell 60% of its shares in Telecom after restructuring the company (Omondi: 2006:1-3).

Following the licensing of ISPs by the Communication Commission of Kenya (CCK) to compete with Telkom Kenya, international calls are now 80% cheaper because of the Voice over Internet Protocol [VoIP] (AllAfrica.com, 2006:1). Today, there are many Internet cyber cafés offering this service for as little as shs 5 per minute (50 South African cents) compared to earlier figures of shs 100 per minute (Rand 10).

2.2.4.2 Cellular Mobile Telephony

The CCK (2004) states that mobile telephone services in Kenya started in 1992 with the analogue system widely known as the Extended Total Access Communication System (ETACS). Although they were launched commercially in 1993, the prices for mobile devices was exorbitantly high (about Kenya shillings 250,000 = \$3125), and therefore unaffordable. Following this, there was a marginal mobile subscriber growth of less than 20,000 during the years 1993-1999.

However, the enactment of the Kenya Communications Act in 1998, led to the introduction of competition in the cellular mobile industry and the entry of Safaricom Limited and KenCell (now Celtel) Communications Limited. This created a phenomenal growth in the number of subscribers, as well as the geographic expansion of the cellular mobile service in the country. The Ministry of Information and Communications [MoIC] (2006:2) indicates that there were 3 million cellular mobile subscribers by June 2004, translating into a tele-density of 0.75 per hundred inhabitants for fixed lines and 9.75 per hundred inhabitants for mobile services against the world average of 19 and 21 respectively. Other current reports from the Department of Commerce, in the United States of America [DOC – USA] (2006:10), indicate that the mobile subscriber base of both Celtel Kenya and Safaricom escalated to about 4,611,970 around June 2005.

According to the GoK's ICT sector report (2007:7), by the year 2006, this figure had sharply increased to about 8,000,000 subscribers.

2.2.4.3. *Safaricom*

Reports from SafariCom (2004) assert that the company was formed in 1997 and is a joint venture between Telkom Kenya and Vodafone. Safaricom is also Kenya's current leading Mobile Telephone Operator. In May 2000, Vodafone, the worlds largest Telecommunications company, acquired a 40% stake and management responsibility of the company. The report further asserts that Safaricom has also opened 6 retail shops countrywide, three of which are located in Nairobi, followed by Mombasa, Kisumu & Nakuru. Plans are underway to open more retail shops in other major towns within the country. Accordingly, Safaricom believes in always putting the customer first, and has therefore developed a variety of products and services to suit customer needs. These include: voice mail service; prepaid tariffs (Jambo, Tariffic and Taifa); postpaid tariffs; 24 hour customer service; short message service (sms); value added services such as call-line identity, call waiting and call holding; safaricom roaming service (available to postpaid customers only); emergency numbers; the automated scratch card vending machine; and the ATM top-up (Joint venture with Standard Chartered Bank) amongst others.

2.2.4.4 *Kencell (now celtel)*

KenCell (2004) states that Kencell was the second fully private company to be awarded a license to operate in Kenya on GSM technology in January 2000 (Kencell: 2004). Their report further confirms that Kencell is a product of a team consisting of Sameer Investments and the French investors Vivendi. While the Sameer group of companies is a conglomeration of leading companies in Kenya, which include: Firestone, Eveready, Sasini Tea and Coffee, Ryce Motors, East African Cables, Equatorial Bank, First American Bank of Kenya and OEL Sysnet Computers (this encompasses various sectors of the economy such as banking, manufacturing, agriculture

and IT); Vivendi Telecom International (VTI), is part of Vivendi Universal. KenCell's heritage greatly complements the company's image because the Sameer Group and Vivendi Telecommunications International (VTI) deliver business expertise and technological resources that most Kenyans rely on. KenCell products and services are under the flagship of the Yes! Brand, with four core values, namely: *Clarity, Simplicity, Assurance and Understanding*. These form the cornerstones that help KenCell discharge services and new opportunities to its customers.

2.2.5 "Old" Technologies/Broadcasting (Television and Radio)

In recent years, Kenya has made significant steps in television and radio in terms of opening the sub-sector to competition and deregulation (CCK: 2001). At the moment, there are a number of stations licensed to broadcast in Nairobi, Mombasa, and in other urban centers. Broadcasting in the rural areas, however, basically remains a preserve of the state-owned Kenya Broadcasting Corporation. Critics have charged that the GoK should fully deregularize the sector and award licenses to operators, thus allowing them to broadcast freely countrywide. According to the CCK (2001), the full deregulation of the television and radio sub-sectors is therefore an important part of overall ICTs restructuring.

Confirmed reports from the MoIC (2006:2) stipulate that an estimated 60% of the population has access to television, and 90% have access to radio services. The CCK (2001) further confirms that the GoK has licensed 16 television stations and 24 radio stations nationally. The GoK has also amended the Kenya Broadcasting Corporation (KBC) Act by transferring the licensing of entrants into the market from KBC to the Ministry of Tourism and Information. Following repossession of idle frequencies, the CCK has licensed and assigned frequencies to 5 companies to operate TV stations,

including KBC TV. The Commission has also assigned frequencies to 19 FM Sound broadcasters, including KBC Radio.

(See Appendix D for a list of the licensed TV and FM stations found in Kenya, courtesy of CCK (2001).

2.2.6 Telecommunications Systems

According to London and London (1999:234), a telecommunications system is a collection of compatible hardware and software arranged to communicate information from one location to another. Telecommunication systems can transmit text, graphic images, voice, or video information.

Digital fiber-optic trunk lines connect major market centers like Nairobi, Mombasa, Nakuru and Eldoret (CSK, 2003). Kenstream, the digital data network, is also available in a number of towns. The report indicates that plans are underway to include Kenya as a part of the "Africa one fiber-optic digital network" being put in place to connect countries around the continent. According to the African Policy Monitor [APC] (2006:1), African operators developing the Eastern Africa Submarine Cable System (EASSy) indicate that plans are underway. The laying of this undersea cable is expected to provide a link that encircles Africa with a high capacity fibre optic cable that will provide a more reliable communications network in the second quarter of 2007.

The CSK (2003) also reports that Kenya has one earth station located in the Rift Valley, which is operated by Telkom. The country has no satellites of its own. VSAT services for upload are the monopoly of Telkom, which serves major commercial banks and large corporations with applications such as ATMS and electronic points of sale. The report further confirms that the Communications Commission of Kenya, in early 2002, licensed a second company (Gilat Alldcan - Africa Ltd) to provide VSAT services for intra-corporate data communications within the country. The license opens

competition with Kenya Ltd's KENSAT, the sole network facility for both local and international connectivity in Kenya. The country's internet backbone,, the Jambonet, is also operated by Telkom. Omondi (2006:2) points out that the GoK has thus far issued another eight licenses to Internet gateway operators, 15 local loop operators, and eight public data network operators. *(Please refer to Appendix f and h for a list of Internet gateway operators and loop operators in Kenya)*. Likewise, Digital subscriber leased lines (DSL) are now available from licensed ISPs. Additionally, Telkom has also introduced ISDN services in the country.

Mutula (2002: 466-467), asserts that there are several information networks that exist in Kenya, i.e.: Healthnet Kenya, used for epidemiological data exchange in developing countries - Healthnet uses low earth orbit (LEO) satellites, simple ground stations, and radio and telephone based computer networks; RINAF (Regional Integrated Networks for Africa), which shares data amongst institutions of higher learning within Eastern, Central and Western Africa - Moi University in Eldoret, Kenya, acts as its focal point in Africa; Infodev/World Bank African Virtual University is hosted by Kenyatta University and links universities in Eastern and Central Africa; and the Kenya Meteorological Office, which links African countries on low speed telex links (x.25 circuits), and is expected to upgrade these links to higher speed digital (64Kbps) TCP/IP based links. Kenya also hosts other international organizations, such as: the Department of Humanitarian Affairs of the United Nations; ICRAF (International Centre for Research in Agriculture and Forestry); ILRI (International Livestock Research Institute); ICIPE (International Centre Insect Physiology and Entomology); and the African Telecommunications Union (ATU), to co-ordinate telecommunications in Africa. All these institutions have built in networks that provide links to the outside world, such as Internet access and voice calls.

2.2.6.1 Wide Area Networks (Internet)

The CSK (2003) confirms that by the year 2003, Internet users stood at around 500,000, including those who access information over 1000 Internet cyber cafes sprawled around the country. Of importance, is that apart from Africa Online, which has a strong foothold in the rural areas, most of the other Internet Service Providers (ISPs) are perched in Nairobi. According to the report, the ISP sector is fairly liberalized, and Kenya is rated fourth behind South Africa, Egypt and Morocco. The Ministry of Information and Communications in Kenya (2006:2) confirms that there are 73 registered ISPs, 16 of which are active, approximately 1,030,000 users, and over 1000 cyber cafes and telephone bureaus as of June 2005. Some of the registered ISPs include:

2.2.6.1.1 JamboNet

Reports from JamboNet (2002) state that JamboNet is Telkom Kenya's Internet backbone, whose mission is to be a world class telecommunications operator, providing efficient, affordable, sustainable, and cost effective modern services of the highest quality and reliability. It offers an internet gateway for ISP's through dedicated digital links. The report further indicates that in its efforts to improve customer-service delivery, JamboNet has developed Telecare Centres in several areas, which include: Bungoma, Buru Buru, Diani, Eastleigh, Extelcoms, Garissa, Kajiado, Kakamega, Kericho, Lamu, Machakos, Malindi, Mombasa, Muthaiga, Nairobi West, Naivasha, Nakuru, Nyanyuki, Ngong Road, Nyahururu and Wajir, amongst others.

2.2.6.1.2 Africa Online Ltd.

Africa Online Kenya is a subsidiary of the African Lakes Corporation (ALC) and started its operations in February 1995 as a store-and-forward e-mail service in Nairobi (ALC: 2001). The ALC reports that Africa Online Kenya

became the first commercial ISP in the country in April 1996, with the establishment of a high-speed data link to Boston. Since then, Africa Online has continued to expand, and in January 2000, it acquired the second ranked ISP in Kenya, namely Net2000. In March 2000, the company embarked on a point-of-presence (POP) expansion program, and today has thirteen POPs deployed nationwide.

In 1997, Africa Online also began servicing Mombasa, the second largest Internet market in Kenya after Nairobi, and currently services clients along the entire Kenyan Coast - from Kiunga in the north, to Lunga Lunga in the south, with POPs in Malindi, Bamburi, Nyali, Mombasa Island and Diani. Kenya operations are involved in numerous community initiatives and charity programs.

2.2.6.1.3 Kenyaweb.com

Kenyaweb.com Limited (2002) has been in operation since early 1996, trading under the name of Form-Net Africa Limited, and its subsidiaries, Weblink Services Limited, Cyber.cafe and Kenyaonline.

Kenyaweb can be best described as an on-line encyclopedia, showcasing the country with detailed information on the country's geography, history, people, culture, economy, business, education, sports, and related governmental functions and departments organized in a hierarchy from the provincial level down to the district level. The site has been hailed as visionary, being the first national web site to incorporate such broad and detailed information for a single country. Kenyaweb.com Ltd is also one of the largest commercial website developers in Kenya.

2.2.6.1.4 Insight Technologies Limited

Reports from Insight Technologies (2004) indicate that this company has grown to become one of the largest Information Technology solutions firm in

Kenya. Customers include government agencies, private corporations, and non-governmental organizations. Services include: web design and hosting using both Unix/Linux and Windows platforms; domain registration; dial-up and dedicated lines; e-classifieds; Internet access and e-commerce solutions.

2.2.6.1.5 ISP Kenya Limited

Based in Mombasa, this ISP is fast growing and popular, and helps local businesses make the most of the Internet. According to the CSK (2003:1), ISP Kenya is one of the leading leased-line providers in the country. ISP Kenya offers low cost domain registration, web design and hosting, and Internet and intra-net services. Consequently, ISP Kenya has elevated awareness of e-business in the country's coastal towns. It empowers businesses by providing the technology, services and commerce networks needed to successfully conduct the relatively new global trade concept of e-commerce. The CSK further reports that ISP Kenya sells and markets itself by offering local organizations a three-pronged e-commerce principle, which includes marketing websites, payment for both goods and services through wired accounts, and the delivery of goods and services. By initiating the first free web based e-mail, ISP Kenya was dubbed "MailAfrica.com". MailAfrica.com aims to enhance access to e-mail and the Internet through the cheapest possible means. Through MailAfrica.net, ISP Kenya hopes to provide information about business opportunities, current affairs, and to advertise businesses in Africa, thereby enhancing the presence of African products in the global market. ISP Kenya offers over 40,000 web pages hosting financial information in conjunction with major financial institutions.

2.2.6.1.6 Nairobi Net Ltd.

Reports from NairobiNet Ltd (2001) indicate that NairobiNet Online is one of the leading Learning Service Providers (LSPs) in the region that offers online courses and certificate programs. The report contends that NairobiNet is dedicated to improving the way companies and individuals learn, use, and master technology through educational solutions that empower learners with choice, allowing them to determine when, where, and how they want their IT education programs to be designed and delivered. Accordingly, NairobiNet harnesses the power of the Internet to increase the effectiveness of training, while reducing overall training costs. Since launching e-Learning in the region in 2000, NairobiNet has been on a mission to provide high-quality e-Learning courseware at affordable prices. NairobiNet provides training for small, middle-sized and large businesses, non-profit organizations, government institutions and individuals.

2.2.6.1.7 Swift Global (K) Ltd.

Swift Global (K) Ltd (2002) was formed in 1995 by Richard Bell and Mohammed Jeneby, and its mission is to provide high quality, reliable Internet and value added services to corporate business in Kenya. Swift Global (2002) asserts that it is in partnership with Gilat Aldean Africa in order to provide customers with VSAT Satellite Internet access. This caters for the seamless delivery of two way upload and download data services to anyone, anywhere in East Africa, regardless of how remote the location. The report contends that accessing the Internet has been made easier by dial-up facilities, especially for customers living far away from urban centers. In this case, no telephone lines or cable systems are necessary. According to the report, Swift Global has regional offices in Nairobi (Central Kenya), Mombasa (Coast Province), Malindi (Coast Region) and Kisumu (Western Kenya).

2.2.6.1.8. Wananchi Online Limited

Wananchi Online (2002) reportedly commenced business in March 2000, with the sole aim of becoming the leading ISP in Africa. The report indicates that Wananchi Online's mission is to provide comprehensive, efficient and reliable Internet and information services to corporate organizations, small to medium-sized enterprises, and individuals using the most up to date technology. According to the report, Wananchi Online created Kenya's most affordable and radical pricing policy for internet connectivity, making Internet affordable and accessible to the Kenyan market. Today, Wananchi Online is committed to ensuring that the African continent becomes more widely accessible as the world heads toward becoming one global village.

2.2.6.1.9 UUNET Kenya Ltd.

Reports from UUNET (2001) indicate that this organisation started operating in 2001, and maintains over 50% of the Internet Bandwidth available in Kenya. The reports explain that UUNET is also a major global organization that provides a range of Internet services to more than 70,000 business customers worldwide. In Kenya, UUNET has a customer base of over 500 corporate organisations, and has expanded countrywide to cover major economic centres with over 13 Points of Presence (PoP). By providing ISP's with Internet backbone services, UUNET expects to not only solve bandwidth problems, but also provide individuals with better browsing and surfing speeds.

2.2.6.1.10 Kenya Data Networks (KDN)

Hoskins (2004) explains that Kenya Data Networks (KDN) is a full service, data communications carrier, which was licensed by the Communications Commission of Kenya (CCK) in January 2003 as a public data network

operator. KDN is a local company, and has a stated policy of using local investors and local expertise to build world-class infrastructure in Kenya. According to Hoskins, KDN is one of Kenya's largest conglomerates, and the pioneer provider of affordable mobile telephone services in Kenya. Hoskins further contends that with an initial infrastructure investment of approximately \$10 million, KDN provides leased line, frame relay, and IP data services in Nairobi, and also access services to Kenya's major ISP's, banks, universities, multinational corporations, and small-to-medium-sized businesses.

2.2.6.1.11 AccessKenya

The CSK (2003) reports that AccessKenya is a corporate ISP, and provides only leased lines services. Specifically designed for the corporate customer, this ISP provides online email and Internet services to allow instant access to messages and to the Internet. It does not offer dialup services to individual customers. AccessKenya has full-backup service equipment ensuring uninterrupted connectivity in case of equipment failure. It offers one of the best speeds available in Kenya today as it provides the best ratios of bandwidth to its customers (CSK: 2003).

2.2.6.1.12 The African Regional Centre for Computing (ARCC)

The ARCC (ARCC: nd) is a registered non-profit research organization whose main vision is committed towards spearheading Africa onto the information superhighway, and promoting the use and development of computing and communications technologies. According to the report, the idea of the centre was first mooted by a graduate student from the University of York, UK (then a lecturer on study leave from the University of Nairobi), alongside other colleagues, comprising three Kenyan professors and graduate students

from North America and Western Europe. The report indicates that the ARCC was first started as a project activity at the Institute of Computer Science (ICS), University of Nairobi, in 1992, and was officially registered as an NGO in 1994. The report further indicates that the ARCC introduced and popularised the Internet in Kenya in 1994, and currently offers training in ICT courses, consultancy services, conducts research and development, runs conferences and symposia, and publishes ICT literature.

2.2.7 Distribution and management of ICTs amongst Kenyan rural women

Most ICT related projects amongst women in the rural areas of Kenya are managed under the auspices of NGOs. According to Esterhuysen (2003:1), African NGOs have been innovative in using ICTs in ways consistent with the available infrastructure and capacity. These include e-mail, mailing lists, and Web database publishing. Most NGOs also make use of wireless technologies, whilst simultaneously integrating new and traditional media. One such organization is the Arid Lands Information Network – Eastern Africa (ALIN-EA), which has joined up with the digital broadcast pioneer, World Space Foundation (WSF), USA, to get information to the remotest parts of Kenya using digital satellite broadcasting. The World Space satellite network is an innovative communication technology that enables people to access information in the remotest villages, even where there are no telephone lines or electricity. It uses three geo-stationary satellites launched over Africa, Asia and America (Ayieko, 2001). It currently operates in four countries - Kenya, Uganda, Tanzania and Ethiopia (Ayieko, 2001:1). In Kenya, ALIN – EA has linked up with organizations such as the Interlink Rural Information Service, an NGO situated in a rural Market centre in Rongo, Kenya. Accessing the multimedia service requires a special adapter card or modem, which is then connected to a computer, and a World Space radio. Information ranging from health, HIV/AIDS, environment, agriculture,

micro-enterprise, and conflict resolution, can then be accessed from the multimedia service.

The second NGO worth mentioning is AfriAfya (African Network for Health Knowledge Management and Communication) which was established in 2001 (Jebet, 2003) by seven Kenyan-based health development agencies. AfriAfya seeks to harness information and technology for community health improvement in rural areas and urban slums, through the use of Information Communication Technologies (ICTs). The organization's vision is to harness modern ICTs for community health and for marginalized Kenyan communities. In many areas lack of health facilities, coupled with inadequate information on preventive and curative measures, has fuelled the spread of diseases. The unchecked spread of HIV/Aids, for instance, is as a result of inadequate information or the misinformation of rural people. In an effort to bridge this information gap, the rural populace have even created myths about various diseases. HIV/Aids, in some communities, is viewed as a curse. Patients are stigmatized and hence fail to seek medical attention.

AfriAfya partner agencies include Aga Khan Health Services Kenya, Amref Kenya Country Program, Care Kenya and the Christian Health Association of Kenya (Chak). Others are HealthNet Kenya, Plan International, the World Vision and the Ministry of Health. The organisation's field centres are in Kwale, Siaya, Lugulu, Bunyala, and Kibera in Nairobi. It is important to note here that all field centers apply technology to improve health, education, gender equality, the environment, and the economy in marginalized areas. According to Dr. Caroline Kisia (Project Coordinator, Afri-Afya), marginalized communities have benefited from the programs offered through the provision of information on disease contraction and spread, symptoms, prevention and cure.

A third significant project, involving the use of ICTs to communicate and disseminate information, is by "Women's Voices". The women's project is

run by ITDG for poor women in Kenya, Peru and Zimbabwe (ITDG, 2005:1). Although women in the project are found living in the urban and not rural slum areas of these towns, it is nonetheless important to take note of the use of ICTs in the communication and dissemination of information. Of particular importance is the need for the women concerned to get their voices heard amongst relevant policy and decision-makers. With poor sanitation and drainage systems, disease is rampant. HIV/AIDS is also no exception. However, with minimal training from ITDG, these women produced videos that captured their challenges, resolves and aspirations. The videos, which feature their poor living conditions, health, alcohol and drug related problems, have been featured on National TV in Kenya, in Africa-wide programs, on German TV, on BBC World Service, on ABC World News USA, and in a New Scientist article. The ITDG project has also won the APC Herbet de Souza "Betinho" Communication Prize in recognition of the use of information and communication technologies for social justice (ITDG, 2005:1-2).

The African Centre for Information and Communication technology ACWICT is another Kenyan NGO committed to the plights of women/girls in ICTs. Constance Obuya, the executive director, isolates "socio-cultural norms" and "non-gender responsive policies as problem areas that need reviewing" (Obuya, 2003:1). To this end, the organization has initiated several projects to promote ICTs among girls/women. Included in these projects is The Horn of Africa Regional Women's Knowledge Network (HAWKNet), which aims to improve the livelihood of women through the use of ICTs. HAWKNet was founded in 2002, and works in Partnership with the United Nations Development Fund for Women (UNIFEM) and the World Bank's Information for development program (INFODEV). HAWKNet is a network of both girls and women from Kenya, Uganda, Tanzania, Ethiopia, Eritrea, Djibouti, Sudan, Somalia and Rwanda. It combines the use of the Internet, radio, and CD-ROM to help women share information amongst themselves.

The use of ICTs amongst rural women also plays a leading role in distance education. The African Network of Information Technology Experts and Professionals (ANITEP), in Asare (1997:1), observes that "African women long deprived of information, education and training can look to advances in information technology to bring learning to their doorsteps". According to Ngechu (in Asare: 1997) from the Department of Distance Education in Nairobi, Kenya, distance education particularly helps the disadvantaged communities in rural areas, as it is for those who are looking for a second chance in education. Ngechu further writes that these programs have had a significant impact on women, who select programs according to their various needs. The programs disseminate information on diseases like the deadly malaria, or research findings on agriculture from the University of Nairobi. An overwhelming number of women (70%) have reportedly adopted techniques and methods learnt from these classes.

E-Touch/Telecenters/Cyber cafés are yet another area in which ICTs are gaining popularity amongst rural women in Kenya (Opala, 2004). According to Opala, these centers offer low-cost communication and information services commonly found in low income and rural areas in developing countries, and are used primarily for basic access to phones, faxes, photocopying, word-processing and other activities such as e-mail and Internet access. Today, there are over 200 E-Touch Centres in rural Kenya operated by local entrepreneurs with the support of ISP Africa Online.

An excellent example of how the Internet is being used in the provision of financial, marketing, and other information related services to rural farmers, is the Drumnet Project sponsored by IDRC. This IDRC-sponsored project aims to demonstrate a link between the provision of information and business services to small-scale farmers. (Opala, 2004:2). Opala observes that DrumNet has established rural "Information Kiosks", and provides free information to local small-scale farmers about the current prices of

commodities on a daily basis. According to Opala, the use of the Internet to track down prices for the benefit of these farms has been tried successfully in neighboring Uganda and Zambia. In this way, the farmer is linked directly to the producer, thereby increasing his chances of getting better prices and profits.

2.3 Mapping and auditing of ICTs in South Africa and among rural women

2.3.1 Background on South Africa

South Africa is situated at the southern tip of the African continent, and by mid-2005, had an estimated population of about 46.9 million (Statistics South Africa (Stats SA), in GCIS (2006/7:2)). According to the report, black Africans were the majority (about 37, 2 million), and constituted about 79% of the total South African population. The white population was estimated at 4.4 million, the coloured population at 4.1 million, and the Indian/Asian population at 1.1 million.

Technologically, South Africa's history had been mostly confined to agriculture and mining, until world war two, when the Council for Scientific and Industrial Research was (CSIR) formed. According to Basson (1996), the CSIR is the largest research development and implementation organization in Africa, and became responsible for creating research capacity and scientific and technological human resources on behalf of the nation. Within the context of Reconstruction and Development (RDP), the CSIR is an important component of the national science and technology infrastructure, and supports the GSA industrial development. The CSIR also strengthens the South African industry's ability to compete internationally, provides technological support for small, medium and micro-enterprises, and supports technology decision-making.

2.3.2 National Information Policy

The Government of South Africa (GSA) has placed a strong emphasis on ICT sector development through the implementation of a National ICT strategy, particularly for disadvantaged segments of the society. An undated report by The Academy for Educational Development [AED] (n.d.) reasserts the Government of South Africa's (GSA) commitment to increase IT access and skills amongst the disadvantaged groups of South Africa (including girls and women). The report adds that the GSA's Department of Communications began the process of developing legislation in the telecommunications human resource base in 1995 and 1996. The 1995 Green Paper on Telecommunications Policy and the 1996 white Paper on Telecommunications Policy formed the basis of the 1996 Telecommunications Act. Specific initiatives include the Info.com 2025, which addresses issues of policy, infrastructure, human capacity and local content within ICT industries. Info.com 2025 supports IT related projects, and also seeks to "empower people in the way they work, live and play, and make South Africa globally competitive". A major objective is one that seeks "to facilitate and promote education and training through the use of telecommunications technologies." Other programs include the establishment of community information centers, public information terminals, Internet connectivity in schools, and training for teachers.

The South African Information Technology Industry Strategy's (SAITIS) focus is on building infrastructure, especially within secondary towns designated as export zones, for both ICT and non-ICT products and services. Through the establishment of the Universal Service Fund, both wire line and wireless service providers have extensive obligations to provide access to previously disadvantaged regions with low income and geographic complexity (SAITIS: 2000). South Africa has also been involved in the Southern African and Far East (SAFE) initiative to promote the connectivity

of all African countries through regional backbones that do not leave the continent. According to the report, it is hoped that SAFE will reduce the cost of calls that are currently routed through Europe (SouthAfrica.info:2006).

The Academy for Educational Development [AED] (n.d: 4) denotes that other initiatives by the GSA are the Technology Enhanced Learning Initiative (TELI), which aims to support curriculum development at grade eight level, offer vocational education, develop information literacy courses for use in schools, and initiate community centers and industry based training sites. Yet another government initiative is School Net South Africa, an organization devoted to expanding Internet use in South African Schools. The AED contends that School Net SA is one of 25 School Nets in Africa, and apart from the support that it receives from the GSA's Department of Education, it also receives support from the private sector, i.e. Microsoft, Cisco, Nortek, Sun, #Com etc. A few activities conducted by this initiative are: Internet connectivity, human resource development, advocacy and marketing.

In another survey conducted by Accenture, Markle and UNDP (2001), the GSA introduced three important taskforces to address the deployment of ICT as an enabler of social and economic development. These include:

- (i) The Presidential International Task Force on Information Society and Development (which is to focus mainly on global ICT markets)
- (ii) The National IT Task Force (which will deal with the issue of "brain drain" and the deployment of ICT initiatives locally) and
- (iii) The IT Council (whose aim is to handle local and provisional government IT functions)

In addition, the government announced the establishment of the Investment Council, which focuses on positioning South Africa's imports and exports

globally and on generating foreign direct investment through international collaborations.

Accenture, Markle and UNDP (2001) further assert that the Information and Communication Technology (ICT) policy in South Africa now incorporates telecommunications and e-commerce. While these are discrete policy and legislative processes, the two are intertwined within the joint national strategies of equitable development and economic growth.

Likewise, Research ICT Africa (2004) denotes that the telecommunication sector in South Africa has been in a process of "managed liberalization" since the second phase of reforms in this sector were passed in the Telecommunications Amendment Act of 2001. According to the Government Communication Information System [GCIS] (2006/7:133), this act has enabled the Department of Communication in South Africa to liberalize the telecommunications market, increase competition, and stimulate the sector in order to bring down the cost of communications. The GCIS further reports that section 40 of this act requires that serviced area licenses provide telecommunications services, voice-over internet protocol, fixed mobile services, and public pay telephones. Mobile operators are also allowed to use any fixed lines for providing both voice and data transmission services.

Following this, the Mail&Guardian (2007) reports that South Africa's Second National Operator (SNO) has now been licensed to operate a publicly switched telephone network. According to the report, South Africa's SNO, namely Neotel, was finally launched in August 2006, and is set to help reduce the high telecommunications costs in South Africa. According to the report, Neotel has secured access to the relevant Eskom and Transnet Infrastructure, including 10,000km of optic fiber backbone, within metros and across the country.

2.3.3 Universal Access Policy/Universal Service Agency [USA] - currently known as the Universal Service and Access Agency of South Africa (USAASA).

The GCIS (2005/6:133-134) states that the USA was launched in 1997 and is a statutory body whose objectives include advising the minister on ways to bring about universal access and service, and coordinating initiatives by service providers such as Telkom, Vodacom, Mobile Telephone Network (MTN) and Cell C . The USA also works with Community Based Organizations (CBO's), Non-Governmental Organizations (NGOs), donor organizations and businesses. The report states that the Universal Service Fund is used to reinforce the development of infrastructure in under-serviced communities.

Current reports from the USA (2006) indicate that while the USA will now be known as the Universal Service and Access Agency of South Africa (USAASA), the Universal Service Fund will be known as the Universal Service and Access Fund (USAF). By the same token, the Department of Communications in South Africa (2006) illustrates that the mandate of the Universal Service and Access Agency is to promote, facilitate and monitor the achievement of universal service and access in under-serviced areas, with respect to communications, and also to manage the Universal Service Fund.

All-in-all, the two tables over the next four pages give summaries of South African national goals as they relate to the Universal Access and National ICT Policy.

According to Parkinson (2005:37-38), the key policies guiding universal access are the Telecommunications White Paper of 1996, the Telecommunications Act of 1996 and the Telecommunications Act Amendment of 2001. The author further states that the 1996 Act set up the regulatory body for telecommunications (South African Telecommunications Regulatory Authority - SATRA), which in 2000 merged with the broadcasting

regulator (Independent Broadcasting Authority - IBA) to form the Independent Communications Authority of South Africa (ICASA).

In Table 1, Parkinson (2005:35) draws on documents and public statements from leading government officials and summarizes the key policy intentions regarding universal access in South Africa.

In Table 2, Audenhove (2003:135) explains that the table gives an overview of the most important policy initiatives as they relate to ICTs and the information society. The table is organised according to areas of developmental strategy; infrastructure; content and applications and skills; and institutional capacity. Different policy processes impacting on and relating to the information society come from a wide variety of sectors and different departments.

Table 1. Summary of South African national policy goals related to universal access

(Source: Parkinson, S. 2005: 35)

<i>Goal</i>	<i>Evidence/where stated (not exhaustive)</i>	<i>Implementation mechanisms</i>
Universal access to telecom (and broadcasting) service, redressing historic inequities	Telecommunications Act 1996, revised Act 2001, mandate of Parliamentary Portfolio Committee on Communications	Regulatory authority (ICASA), licensing agreements, Universal Service Agency, Universal Service Fund
Delivery of government services including social services (e-health, e-education, etc.)	Eg, Department of Education White Paper on E-education (2003), research commissioned by PNC ISAD	Various government departments, GCIS, PNC ISAD, Universal Service Agency under 2001 mandate
Improvement of communication between government and citizens	RDP 1994	Various government departments co-ordinated by GCIS (own services)
Democratization, diversification of media and expression	RDP 1994, MDDA Act 2002	DoC, MDDA, Department of Arts and Culture
Supporting local development through information provision	Mandates of DoC, Universal Service Agency	DoC, GCIS, Universal Service Agency, various government departments
Supporting SMMEs and job development	ICT Economic Empowerment Charter (2004 in progress)	Department of Trade and Industry, ISETT SETA, Universal Service Agency under 2001 mandate
Creating a South African information society	Presidential speeches, eg 2001 State of the Nation address, Telecommunications White Paper 1996	Various: DoC, Universal Service Agency, Department of Arts and Culture, presidential task forces

Table 2 Policy initiatives and actors

Source: Audenhove (2003:135). *Towards an integrated information society policy in South Africa*

Policy documents or initiatives	Description of the programme or part of the programme	Responsible department or institution
DEVELOPMENTAL STRATEGY (economy, industry, technology and innovation)		
White Paper on Science and Technology (November 1996)	Science and technology policy geared at innovation and growth	Arts, Culture, Science & Technology
Foresight (June 1999)	Prospective study directed at a long-term economic and industrial growth strategy	Arts, Culture, Science and Technology
South African Information Technology Industry (IT) Strategy (2000)	Industrial strategy for the IT sector	Trade and Industry
Growth, Employment and Reconstruction (June 1996)	Neo-liberal policy framework for economic development	Presidential Office and Department of Economy
e-commerce	Overall policy to stimulate and regulate electronic commerce	Communications
INFRASTRUCTURE (networks and infrastructure)		
Telecommunications Act (November 1996)	Establishes a new policy framework for telecommunications	Communications
Telkom	Under the new framework responsible for network extension and universal service	Communications (as major shareholder)

Satra	Responsible for regulating the telecommunications sector	Communications
USA	Responsible for the promotion of universal service and access. De facto responsible for the implementation of telecentres	Communications
GCIS	Responsible for the implementation of MPCC's and the coordination of telecentre initiatives	President
Technology-enhanced Learning Strategy (May 1997)	Strategy to translate the earlier TELI in concrete initiatives and projects	Education
Centre for Educational Technology and Distance Education (1997)	Centre responsible for policy preparation in respect to distance education and technology in education	Education
Schoolnet SA (November 1997)	Infrastructure in the educational sector	Education, communication, Trade and Industry
State Information Technology Agency	New structure responsible for IT in government. Should lead to a better integration of systems and networks	Public Service and Administration
CONTENT AND APPLICATIONS		
Technology-enhanced Learning Strategy (May 1997)	Strategy to translate the earlier TELI in concrete initiatives and projects	Education
GCIS	Responsible for government communication and development communication	President

White Paper on Broadcasting Policy (May 1998)	New policy framework for the audiovisual	Communications
Broadcasting Act (April 1999)	Legislation reforming the audiovisual sector	Communications
Schoolnet SA (November 1997)	ICT applications for the educational sector	Education, Communications, Trade and Industry
SKILLS		
Educational Policy in general	In as far as it provides people with the right skills to function in the information society	Education
National Qualifications Framework (from 1996)	Qualifications and certification system for the education system	South African Qualifications Authority
INSTITUTIONAL CAPACITY		
White Paper on Public Service (November 1995)	Reforms the old apartheid structures in one public service with one public administration	Public Service and Administration
Educational and vocational policy in general	In as far as it provide people with broad skills to function in society and in modern institutions and organisations	Education, Labour
Employment Equity Act (October 1998)	Sets out the policy framework for to support disadvantaged groups in employment	Labour

In spite of all these efforts on ICT policy formulation, Parkinson (2005:34) reiterates that the main problem with the act is that it has overlaps and does not clearly establish the roles and responsibilities of the agency and the regulator. Audenhove (2003:6), on the other hand, retorts that South Africa still lacks a "formal vision of the information society in the form of an integrated policy or policy document", as different departments drive policy processes. According to Audenhove (2003:135), there is a need to coordinate this broad body of different policy areas and integrate them with broader macroeconomic and developmental policies.

2.3.4 National gender policies

According to the Academy for Educational Development [AED] (n.d:4), the South African Government is committed towards gender equity in IT and "creating an enabling environment for South African women to participate in IT training programs". The Commission on Gender Equality, the National Gender Forum housed in the Department of Justice, and the Office on the Status of Women in the Office of the President, are examples of government efforts that have been initiated for the sake of emancipating women. Others include initiatives in the telecommunications sector, embodied in the Department of Communications', Gender, Youth and Disability Desk. The aim is: "to integrate gender, youth and disability sensitive perspectives in all departmental programs and policies... The Department will also ensure that empowerment strategies, policies and legislation designed to ensure more meaningful participation of historically disadvantaged citizens, are sensitive to biases which exclude equal participation in the communications sector of the economy" (AED, n.d:5).

2.3.5 ICT services

2.3.5.1 Telephones/Telephone Density

Research ICT Africa (2004) denotes that the telecommunications sector in South Africa is characterized by relatively high retail prices, super profits, job losses, licensing delays, and deadlocks with minimal new foreign investments. Nevertheless, according to the DoC [USA] (2006:21), South Africa's telephone system is the best developed and most sophisticated on the African continent. The report explains that domestic systems consist of carrier-equipped open-wire lines, co-axial cables, microwave radio relay links, fiber-optic cables, radiotelephone communication stations and wireless local loops. Currently, Telkom has well over five million main fixed lines in use.

2.3.5.2 *Cellular Mobile Telephony*

The cellular industry in South Africa has witnessed tremendous growth over the years, and currently there are four mobile operators, namely: Vodacom, MTN, Cell C and VirginMobile.

2.3.5.2.1 *Vodacom*

Vodacom (2005) contends that the pan-African cellular communications company provides world-class GSM service to millions of customers in South Africa, Tanzania, Lesotho, Mozambique and the Democratic Republic of Congo. Accordingly, Vodacom is the market leader in South Africa and offers a UMTS or 3G service. The report indicates that Vodacom has more than 5700 base stations around the country, ensuring in excess of 95% of all South Africans are within the coverage area of its impressive cellular network. As at 2004, Vodacom had deployed more than 24,767 community services telephones in previously under-serviced areas, compared to the license obligations of 22,000.

Vodacom initially started commercial operations in 1994, with a modest subscriber base of 50,000 (Cellular Online, 2004). These figures have rapidly soared, and in May 2006, Vodacom connected its 20 millionth subscriber in South Africa (GCIS, 2006/7:137).

2.3.5.2.2 *MTN*

This South African Cellular Network was awarded a license in 1993 and provides access to 94.5% of South Africa's population (MTN South Africa, 2005). According to GCIS (2006/7:137), MTN International offers cellular network access and associated services through its subsidiaries and joint ventures in Nigeria, Cameroon, Uganda, Rwanda and Swaziland. Currently,

AllAfrica.com (2007) records hold that by May 2007, MTN South Africa had a subscriber base of 13,030,000 million.

2.3.5.2.3 Cell C

The Cell C consortium started its operations in 2001, and as of 2004, had 3 million users. It operates at GSM 900 and 1800 Mhz. Of the 1.9 million active users, some 84 percent - or 1.6 million of its subscribers - were prepaid users, and 16 percent contract (Cellular Online, 2004). Current reports from Moneyweb (2007) indicate that the Cell C subscriber base now stands at 3.3m.

2.3.5.2.4 VirginMobile

According to Mobile Africa (2007), this new operator is a virtual network operator that was launched in South Africa in June 2006. Mobile Africa reports that the cellular company uses Cell C network infrastructure to provide cellular communications services to subscribers in South Africa. Mobile Africa further states that the services offered by this network include voicemail, international roaming, sms, mms, internet caller ID, and flexible billing.

2.3.6 "Old" Technologies/Broadcasting (Radio and TV)

2.3.6.1 Radio

According to Erasmus (2005:1), South Africa's broadcasting history can be traced back to the early twenties, when South African Railways made its first wireless broadcast in Johannesburg. This led to the first radio station, "JB Calling", which was transmitted by the Associated Scientific & Technical Club of Johannesburg, then the Durban Pietermaritzburg Calling radio service, transmitted by the Durban Corporation, and the "Cape Town Calling" radio

service, transmitted by the Cape Peninsula Publicity Association. However, an untimely onset of financial constraints led to the dissolution of all three radio services and the formation of the African Broadcasting Company (ABC) in 1927 by the Schlesinger Organization. The author narrates that following further investigations, the South African Parliament, under Act 22 of 1936, formed the South African Broadcasting Corporation (SABC).

Mishkind (2006:2) explains that the inception of an FM broadcast service in South Africa began in 1961 from the Brixton Tower (now Sentech Tower) and transmitted in English and Afrikaans. Although these services were for many years known as Radio South Africa and Radio Suid-Afrika respectively, they are now known as SAFM and Radio Sonder Grense (RSG).

2.3.6.2 Public Broadcast Services include:

Mishkind (2006) illustrates that public broadcast services are owned by SABC and are transmitted in indigenous languages. They include:

- (i) SAFM (Based at SABC, JHB) - National English program
- (ii) RSG (in Afrikaans Radio Sonder Grense) - National Afrikaans programme
- (iii) Ukhozi FM (at SABC, Durban) - Regional Zulu programme
- (iv) UMhlobo Wenene (at SABC, Port Elizabeth) - National Xhosa programme
- (v) Radio 2000 (in JHB) - National music and entertainment station
- (vi) Ligwalagwala FM (at SABC, Nelspruit) - Regional Tsonga Programme
- (vii) Munghana Lonene (at SABC, Polokwane) - Regional Tsonga Programme
- (viii) Thobela FM (at SABC, Polokwane) - Regional Lebowa programme

(ix) Phalapala FM (at SABC, Polokwane) - Regional Venda programme

(x) Lotus FM (at SABC, Durban) - National Indian programme.

On the whole, the South African Broadcasting Corporation (SABC) has 18 radio stations that broadcast in 13 languages. Well over 19 million adults in South Africa tune into these stations (DoC-SA, 2005).

2.3.6.3 *Television*

2.3.6.3.1 *SABC*

GCIS (2006/7:141-142) states that the South African Broadcasting Corporation (SABC) has three free-to-air channels, which broadcast in 11 languages. According to the report, these channels reach a daily audience of almost 18 million people, and have more than four million licensed television households.

2.3.6.3.2 *e.tv*

According to e.tv (nd), e.tv is South Africa's first private free-to-air television channel, and was launched in 1998. The report states that the e.tv channel broadcasts a full-spectrum programming service to 78% of South Africa's population, and is owned by the Black Empowerment Group, Hosken Consolidated Investments Limited and Venfin Limited. It has offices in Johannesburg, Cape Town, Durban, Port Elizabeth and Bloemfontein. The report contends that e.tv has approximately 400 employees, with a viewership of 11461000.

2.3.6.3.3 *M-Net*

GCIS (2006/7:142) illustrate that M-Net is South Africa's first private subscription television service, and was launched in 1986. M-Net channels

are delivered through analogue terrestrial and digital satellite distribution, and offer movies, sport, children's programmes, international and local series, and local reality shows.

2.3.6.3.3 Satellite broadcasting

MultiChoice Africa [MCA] was formed in 1995 to manage the subscriber services of its sister company, M-Net, and became the first company on the continent to offer digital satellite broadcasting. Operations include subscriber-management services and digital satellite television platforms, which broadcast 55 video and 48 audio channels, 24 hours daily (GCIS 2006/7:142).

2.3.7 Telecommunications Systems

2.3.7.1 Satellite links

Milne, G. W et al (2004:1) stipulate that Stellenbosch University developed the first successful micro-satellite program, SunSat (Stellenbosch University Satellite). SunSat 1 was South Africa's first Satellite to reach orbit and was launched in February, 1999. The authors state that South Africa's second satellite - Sunsat -2004 (again from the University of Stellenbosch) was launched late in 2005. South Africa's second Satellite, named "Sumbandila" (meaning "lead the way"), is an 80-Kilogram micro-satellite and is expected to orbit the earth at a height of 500-kilometers (Southafrica.info 2006:2). Accordingly, this satellite will be used to support, monitor and manage disasters such as floods, oil spills and fires.

2.3.7.2 Copper/ fiber optic cable

In a supplementary report to the International Steering Committee [ISSC], the Square Kilometer Array (SKA) (2003:48) illustrates that Telkom has an

extensive optical fiber cable network deployed in South Africa, which also penetrates into the rural areas.

By the same token, Telkom SA (2006:2) reports that the expansion of this high performance cabling system in South Africa includes the following:

1. The SAT3/WASC (Southern Africa-Western Africa Submarine Cable) which is a 15000 Km high performance fiber optic cable linking Europe with South Africa and a number of countries in the West African coastline. According to Telkom SA, the SAT3/WASC is the third in a series of telecommunications projects that date back to 1964, when South Africa's *Department of Posts and Telegraphs proposed a cable system to link South Africa with Australia and Asia*. The inadequacy of the radio circuits between South Africa and Europe led to the creation of the SAT 1 cable system, which is a coaxial system that is capable of transmitting 360 simultaneous telephone calls (Telkom SA, 2006:2).

Telkom SA (2006:1) explains that the SAT3/WASC/SAFE is a US \$ 600 million project that will not only support Africa's growing telecommunications requirements, but also provide a secure, reliable traffic route between Western Europe, the Americas and Asia. Telkom SA (2006:2) denotes that this project will bring the power of high speed connectivity to Africa, sophisticated communications, paperless faxing, access to the world's research facilities, and access to news almost instantaneously. Furthermore, businesses will be able to engage in e-commerce, open up new markets, expand distribution, and reach various buyers, suppliers and other service providers.

2. Telkom SA (2006:2) further reports that SAT 1 was replaced by SAT2 in 1993 to work alongside the existing satellite system. SAT2 can handle

15360 simultaneous transmissions in several different forms, including voice, television and data transfer.

3. Additionally, SAFE (South African-Far East) continues the connection another 13800km as far as Malaysia via re-union, Mauritius and India.

4. Regarding neighboring countries, SKA (2003:49) denotes that there are established transmission links between Telkom SA from/to Lesotho, Swaziland, Namibia, Zimbabwe, and Mozambique. Optical fiber cable routes exist between SA (Johannesburg and Namibia (Windhoek) and between SA (Johannesburg and Botswana (Gaberone)). In cases where the neighboring countries are not geographically linked, microwave links or satellite connections are used.

5. According to iWitnesses (2007), the World Bank has approved a US\$164.5 million package to connect East and Southern Africa to the global broadband infrastructure. In conformity, the World Bank (2007) narrates that this international connectivity will decrease the cost of doing business, significantly improve private sector investment opportunities in the region, and also improve service delivery in universities, schools, hospitals and the civil service.

2.3.7.3 Wide area networks [WANs e.g. the Internet]

The Online Publishers' Association (OPA) and the international ratings company Nielsen/Net ratings, in Government Communications and Information Systems [GCIS] (2006/2007:135), indicate that South African websites are attracting an increasing number of local and international consumers. By June 2006, readership or unique browser figures had reached 4.6 million, and page impressions had hit 115 million.

Please see the list of licensed ISPs found in South Africa, courtesy of the Internet Service Provider Association of South Africa [ISP] (2006) in the index.

2.3.8 Equipment

(Network Base stations)

According to Cellular Statistics (2004) more than 5500 Vodacom base stations provide coverage to 60 % of the geographical area of the country.

2.3.9 Distribution and management of ICTs amongst South African rural women

Women'sNet (2006) reports that Women's Net was launched in March 1998, as a joint initiative between the South African Non-Governmental Organisation Network (SANGONET) and the Commission on Gender Equality (CGE). According to Women'sNet, Sangonet was established as WorkNet in 1987 to provide regional electronic information and communications networks to NGOs in South Africa. In 1993, Sangonet's scope widened to include development and human rights workers, and the provision of an accessible and affordable electronic communications infrastructure, including the provision of information. Following the election of a democratically elected government, the Commission on Gender Equality (CGE) and [Sangonet] initiated Women'sNet in 1998.

Womens'Net (2006) exists primarily to serve women's information needs in a user-friendly way, and therefore to: make ICT technology accessible to women; change the flow of information from North-South, to South-South; empower and train women in the use of electronic media; and for for women's economic empowerment; among others. Women'sNet prioritizes

women who do not have access to technology, especially rural women, NGO's and Community based organizations, self employed women, and government information workers.

Women'sNet (2006:2) further illustrates that its priorities include: making ICTs accessible to women, particularly disadvantaged women; providing gender-sensitive training and support in the strategic use of the internet; linking projects, people, tools and resources through the empowerment and support of technology planning processes within women's civil society organisations, and through exploration and awareness raising of free and open source software solutions (FOSS); creating a platform for women's voices and issues through the Women'sNet website and through capacity development; facilitating the dissemination of information in formats accessible to women who are not directly linked to the Internet; facilitating collaborative website development; and the strengthening of women's networks.

2.3.10 Summary

This chapter has audited and mapped the ICT infrastructure in Kenya and South Africa, and also accounted for ICT distribution amongst rural women in both countries.

The findings of the chapter indicate that in Kenya there are:

(a) 2 mobile operators namely: Kencell and Celltel.

The Ministry of Information and Communications (2006:2), indicates that there were 3 million cellular mobile subscribers by June 2004, translating into a fixed tele-density of 0.75 per hundred inhabitants for fixed-line and 9.75 per hundred inhabitants for mobile services, against the world average of 19 and 21 respectively. Other current reports from the Department of Commerce, from the United States of America [DOC ~ USA] (2006:10),

indicate that the mobile subscriber base of both Celtel Kenya and Safaricom escalated to about 4,611,970 around June 2005.

According to the Kenyan Government ICT sector report (2007:7), by the year 2006, this figure had sharply escalated to about 8,000,000 subscribers.

(b) 73 registered ISPs, 16 of which are active; approximately 1,030,000 users and over 1000 cyber cafes and telephone bureaus as of June 2005.

(c) 16 operational television stations and 24 FM radio stations.

(d) Approximately 11,500 public phones installed throughout the country as of the year 2003.

(e) An estimated 60% of the population has access to television and 90% have access to radio services.

(g) Although there are several NGOs, particularly in Nairobi, that work with ICTs, the study isolated two organizations, namely AfriAfya and ALIN-EA, that specifically work with ICTs and rural women.

Kenya has a draft ICT Policy document. This document has, however, not yet been enacted into Parliament.

Correspondingly, the findings in South Africa indicate that:

(a) The South African Broadcasting Corporation (SABC) has 18 radio stations that broadcast in 13 languages. Over 19 million adults in South Africa tune into these stations daily (Department of Communications, 2005).

(b) The SABC has three free-to-air channels, which broadcast in 11 languages. According to the report, these channels reach a daily audience of almost 18 million people and have more than four million licensed television households (GCIS, 2006/7:141-142).

(c) The e.tv (nd) is South Africa's first private free-to-air television channel and was launched in 1998. According to their report, the e.tv channel broadcasts a full-spectrum programming service to 78% of South Africa's population.

(d) M-Net is South Africa's first private subscription television service and was launched in 1986. M-Net channels are delivered through analogue terrestrial and digital satellite distribution, and offer movies, sport, children's programmes, international and local series, and local reality shows (GCIS, 2006/7:142).

(e) South Africa's telephone system is the best developed and most sophisticated on the African continent. Domestic systems consist of carrier-equipped open-wire lines, co-axial cables, microwave radio relay links, fiber-optic cables, radiotelephone communication stations and wireless local loops. Currently, Telkom has well over five million fixed lines in use (DoC - USA, 2006:21).

(f) The Online Publishers' Association (OPA) and the international ratings company Nielsen/Net ratings, in Government Communications and Information Systems [GCIS] (2006/2007:135), indicate that South African websites are attracting an increasing number of local and international consumers. By June 2006, readership or unique browser figures had reached 4.6 million, and page impressions had hit 115 million.

(g) South Africa has 4 mobile operators namely: Vodacom, MTN, Cell C and VirginMobile.

In May 2006, Vodacom connected its 20 millionth subscriber in South Africa (GCIS, 2006/7:137).

Allafrica.com (2007) records hold that by May 2007, MTN South Africa had a subscriber base of 13,030,000m.

Current reports from Moneyweb (2007) indicate that the Cell C subscriber base now stands at 3.3m.

(h) South Africa does have a National ICT Policy. Activities that are related to ICTs and rural women in South Africa can be traced through organisations like the USAASA and NGO's like Women'sNet.

Given the above summary of the ICT infrastructure in both Kenya and South Africa, it is apparent that the mobile sector has enjoyed phenomenal growth in both countries.

The next chapter (three) looks at the concepts information, information needs, information seeking and information use.

CHAPTER THREE

CONCEPTIONS OF INFORMATION, INFORMATION NEEDS, INFORMATION SEEKING AND INFORMATION USE

3.1 Introduction

The previous chapter reviewed ICT infrastructure in both Kenya and South Africa and included an illustration of: **ICT services** such as telephony and cellular/mobile telephony, **“old” technologies/broadcasting** namely, radio and TV, the use of and distribution of **telecommunications systems**, such as copper or fibre optic cable, wireless or cellular mobile links, satellite links and wide area networks (for e.g. the Internet) and, equipment such as *network base stations for wireless service*.

This chapter analyses the conceptions of information need, seeking and use and also provides an overview of conceptual models used in the field of Information seeking and retrieval. The purpose of this analysis is to establish whether the reviews relate to the information needs and uses and also information behaviour of the rural woman.

This chapter makes an attempt to realise the following objective of the study:

1. To identify the ICT information needs and e-services of rural women in areas such as health, education, agriculture, social welfare, entertainment, commerce and industry, in both Kenya and South Africa.

The chapter also provides an understanding into the following research

questions:

1. What are the information needs and information uses of rural African women?
2. Which sources of information do rural African women use to acquire information?

3.2 What is Information?

A number of definitions lend themselves to the concept of information given its *intangible nature*. Most dictionaries define information as knowledge, intelligence, facts or data.

The fact that information is, by its very nature, intangible, makes it all the more difficult to *define*. Hence, *in-order to understand its meaning and subsequent role in development*, this study has found it necessary to illustrate varying interpretations by disparate authors.

Earlier doctrines by authors such as Katz (1967:14) describe information as the *difference between knowing and not knowing, between being faced with a number of possibilities, and between knowing the one that actually prevails*. Webster (1995:27) takes on a two-prong approach, the first of which defines information as being meaningful, having a subject, and being intelligent, whilst providing instruction about something or someone. In the *second approach*, Webster distinguishes information from this semantic concept and instead defines it "*as a quantity which is measured in bits and defined in terms of the probability of occurrences of symbols. It is a definition derived from and useful to the engineer whose interest is with the storage and transmission of symbols, the minimum index of which is on/off (yes/no or 0/1)*"

In his theory on information, Weisman (1972:13) argues that information has nothing to do with the meaning of a message. According to Weisman, information is a measure of the unexpectedness of a message. Therefore, computer printouts, punched cards and blips on the screen of a Cathode Ray tube are included. Weisman further claims that information is derived from *experience, observation, interaction and reading*. According to Weisman, information has six notable parameters, namely: the quantity of information, which can be measured by the number of documents, pages, words, characters, bits, drawings pictures etc.; the content of information, i.e. the meaning of the information; the structure of information, i.e. the format or organization of the information and the logical relationship between statements and/or elements; the language used, i.e. the symbols, alphabets, codes and syntax, with which the ideas are expressed; the quality of information produced, i.e. the completeness, accuracy, relevance and timeliness of information; and lastly, the total time span during which value can be derived from the information.

Other authors, such as Lucey (1987:13), argue that information is data that has been interpreted and understood by the recipient of the message. Lucey is emphatic about the dual roles played by the sender and the user as both *determine whether or not a message/report contains information or just processed data*. In this case the recipient (and not just the sender) is involved in transforming data into timely and relevant information. In his two-prong approach, Lucey first points out that the value of information is derived from the changes in decision behaviour caused by information, *minus the cost of production*. Secondly, Lucey declares that it is important for the producers of information - whether produced in the form of a report or message - to be aware of the user's requirements, education, position in the organisation/community, language and content matter, in order to increase the likelihood of information being derived from the message.

According to Brenner (1992), the 1960's and the advent of computers, brought about the realisation that information included more than what is traditionally contained in library and documentation centres. The author points out that the term "graduate library schools" was replaced with "graduate schools of library and information science", and "librarians" became referred to as "information scientists". Brenner further explains that services like banking (paying), flying (reserving), and shopping (buying) which were available even before the advent of computers became *information services* with computerisation.

Cleveland (1982) offers another perspective into understanding information, as he maintains that information is hierarchical, with facts or data forming the base level, followed by information, knowledge and wisdom. The author argues that by putting facts or data into context, information acquires a quantitative value. Thereafter, by selecting and organizing this information, one can have or produce knowledge that can then be holistically integrated into a whole (i.e. wisdom). Cleveland asserts that it is this wisdom that makes a difference for diverse individuals and organizations.

In his article on "whither the information economy", Heskett (2000:1) has the following remarks on Cleveland's article: "Unlike goods, information is expandable without any obvious limit. Is compressible for easier handling. Is transportable at least at the speed of light. Is substitutable for capital, labor, or physical materials. Is shared amongst people, with an expansion of the total, as it is shared". In this respect, Cleveland underscores the fact that information is a resource that has potential in business decisions, *organizations and product development*.

Barlow (1994/2004:7) further argues that, "the central economic distinction between information and physical property is that information can be transferred without leaving the possession of the original owner and

remarks, "If I sell you my horse, I can't ride him after that. If I sell you what I know, we both know it".

3.3 Information Theory - Origins

Information Theory was first developed during the late 1940's by Claude Shannon and Warren Weaver (Paris, 2000). In Paris' narration, the *fundamental basis of Shannon and Weaver's information theory is the communication process, which includes an information source, a transmitter, a receiver, a destination, and noise.*

Therefore in this respect, there is a source from which information *originates, and a destination, i.e., the individual being communicated to.* According to the authors, the voice from the source accounts for the transmitter, while hearing of the end-user accounts for the receiver. Noise in this instance is any form of interference caused during the communication process.

A similar model, further illustrating this process of communication, was developed by Strain and Wysong (1978) who describe communication as a process that consists of a sender, a message and the receiver. The driving force behind this theory stems from the belief that to increase the content of *information, one must try and reduce entropy - noise.* Lucey (1987) further examines the Information theory by Shannon and Weaver, and identifies three levels of communication i.e. Firstly the technical level which is from a telecommunications point of view. It looks into how accurately the symbols of communication are transmitted, and forms the main thrust of Information Theory. The second level is concerned with semantics, which looks into the precision with which the transmitted symbols convey the desired meaning. In other words, information must be relevant, have meaning and a subject. It must also be intelligent and have instruction about something and/or

someone. Thirdly, information theory is concerned with the effect that information has on the receiver. In other words, does the perceived meaning of the message affect conduct in a desired way?

3.4 Information needs

Julien (1995:1) illustrates that information needs and uses in library and information science (LIS) may broadly be defined as that which is concerned with information seeking, determining users' needs for information and the subsequent use of information. More specifically, Wilson (1981) identifies a need as a subjective experience that *only occurs in the observer's mind* and can therefore only be discovered by deduction. Wilson argues that in spite of the subjective nature of needs, various types of needs have been defined through deduction, for example, Morgan and King in Wilson (1981) argue that needs emerge from three kinds of motives:

- (i) Physiological motives (for example hunger and thirst)
- (ii) Unlearned motives (including curiosity and sensory stimulation) and
- (iii) Social motives (the desire for affiliation, approval or status, or aggression).

According to Wilson (1981) the aforementioned categories are interrelated and an individual may therefore engage in information seeking behaviour to satisfy all these needs. The author goes on to explain that the context of any one of these needs may be the person himself/herself, the role/demands of *the person's work or life*, or the environments (political, economic, technological etc) within which that life or work takes place.

In this study, this principle by Wilson assists in determining why rural women seek specific types of information and how the environment (as *determined by social factors* such as illiteracy and poor infrastructure) limits their scope and access to information. For example, the need by rural

women in South Africa to acquire social welfare information ranged from music/religious gatherings to travel/holidays, and community projects/women group activities, pension and shopping/movies. Reasons for accessing this information ranged from leisure activities, to entertainment, spiritual growth and relaxation, and improved standards of living. As is evident, these needs are interrelated and include in their range physiological, affective and cognitive needs.

In other examples, findings by Mooko (2002) on the information needs of rural women, reveal a comparatively higher percentage of physiological information needs [i.e. sickness, food and clothing], which are accessed mainly from personal and interpersonal networks. According to the author, this information need and information-seeking behaviour is determined by social factors, such as literacy levels and the cultural norms of the women. Mooko argues that because most rural African women are educationally disadvantaged, they are more inclined towards oral means of communication. In a recent study on the informal sector in Uganda, Odongo and Ocholla (2004:58) illustrate that an information need arises when an informal entrepreneur encounters a work-related problem that can be resolved through the use of information. Once again, the role demands or occupation of a user will inevitably determine the information need and use. Krikelas (1983: 10) explains that studies of general publics, as well as those focusing on special audiences (e.g., blue collar workers, scientists, academic librarians, engineers, historians etc) have demonstrated that the setting in which a person works (or lives) has great influence on defining needs. This principle can be seen in various studies involving the social and environmental contexts of rural women, i.e., Ngimwa, Ocholla and Ojiambo (1997) on Kenya, Jiyane and Ocholla (2004) on South Africa, Ikoja – Odongo focusing on the information needs of women in the informal sector of Uganda (2002), Mooko (2002) focusing on women in Botswana and Mchombu (2000) on information needs of women in small businesses in Botswana.

Chang (1989) reasons that an information need is present when a gap, uncertainty or deficiency in a person's cognitive state is recognised. According to Belkin in Chang (1989) this deficiency prevents a person from making sense of the surrounding world, and is described as the "Anomalous State of Knowledge"

In order to provide a clearer understanding of the concept of information needs and use, Dervin and Milan (1986: 16)

"posits information as something constructed by human beings. It sees users as beings who are constantly constructing, as beings who are free (within system constraints) to create from systems and situations whatever they choose. It focuses on understanding information use in particular situations and is concerned with what leads up to and what follows intersections with systems. It focuses on the user. It examines the system only as seen by the user. It asks many "how questions" e.g. how do people define needs in different situations, how do they present these needs to systems, and how do they make use of what systems offer them".

Dervin and Milan (1986:10-12) further give an illustration of two paradigms, namely: the "traditional paradigm" and the "alternative paradigm". According to these authors, there are six different approaches to "information needs assessment" in the "traditional paradigm", which include:

3.4.1 *The demand on system/resources approach*

In this approach the extent to which users use different kinds of sources, media, systems, documents, materials or channels, implies or determines where the need or demand is greatest or where it is less than it ought to be. In this study, the demand on the system/resources approach played a crucial role in determining the information and ICT needs of rural women in both Kenya and South Africa. For example, since the radio is the most

commonly used ICT amongst rural women in both Kenya and South Africa, it can be safely deduced that there is a higher demand for the radio as a medium of communication than for the TV.

3.4.2 *The awareness approach.*

This approach focuses on determining or measuring the levels of respondent awareness of current services. Need is determined by assessing where areas of awareness are deemed lower than they ought to be. This study did not use this approach in the survey.

3.4.3 *The likes - dislikes approach*

By determining how much people are satisfied or dissatisfied with different aspects of a given service, one obtains an indication of the need for the service, i.e., areas that satisfy provide an indication for a need for more of that service, and those that do not satisfy indicate that system improvement is necessary.

3.4.4 *The priorities approach*

By using a list of priorities, as determined by the users themselves, an indication as to the type of information, activities or characteristics users would prefer, or for that matter need in a particular information system, may be determined. In this study for example, priority in terms of the information needs of rural South African women in health included: respiratory illnesses e.g. TB and Asthma, to HIV/AIDS, arthritis terminal and chronicle diseases such as cancer), waterborne diseases, diet/nutrition, rheumatism, family planning, rabies, snake bites (sexually transmitted diseases, dentistry, and fits.

3.4.5 *The community profile approach*

This approach develops and measures the demographic and environmental needs of a community.

3.4.6 *The interests, activities and group memberships approach*

In these measurements, respondents are asked to detail their interests, activities, and their group memberships. Extrapolations are then made from the data in order to infer program development needs.

In a critical analysis of the above mentioned approaches, Dervin and Nilan (1986:17) stipulate that traditional paradigms have some limitations, as they are all constrained by system definitions as to what "needs" are. The authors argue that "information needs" in these traditional paradigms have not been defined as what users think they need, but rather as what is in the information system that is needed. In other words, studies using any of the above mentioned approaches centre on user behaviour primarily in the context of user interaction with systems. "Need" in this regard could therefore be said to be directed towards "system needs" and not "user needs". According to these two authors, studies with a traditional paradigm focus mostly on "what" questions (e.g. 'what systems do people use?' or 'what services do people use?').

In contrast, in conceptualising user-oriented research on needs and uses, Dervin and Milan (1986: 19-24) explain that the "alternative" paradigm has three primary approaches, i.e.: the value added approach (user-values approach); the anomalous state of knowledge (ASK); and the sense making approach.

3.4.7 *Taylor's Model (user-values theory/approach)*

Macmullin and Taylor in Dervin and Nilan (1986:19) stipulate that information needs are generated from user problems in a given environment. Information in this context is therefore used to solve particular problems.

3.4.8 *Dervin's Model (sense making theory/ approach)*

In this model, Dervin and Nilan (1986: 21) posits an information - need situation as one that is present when the internal sense of the person runs out, thus causing an information gap. This approach has been used to describe the information needs and uses of people in different contexts e.g. blood donors, cancer patients, library users etc. Dervin and Nilan point to a three-part model, i.e, SITUATION-GAP-USE. According to the authors, the user/respondent faces moments when they are "stopped" by different questions concerning a given problem in a particular situation. In other words, a user normally faces what could be described as a "cognitive gap." The authors use another word to describe "uses", namely, "helps", and code the word "uses" in terminology such as: got picture; ideas; understandings; found direction; gained skills; got started or kept going; got connected to others; got rest/relaxation; and got happiness/pleasure etc.

3.4.9 *Belkin's Model (Anomalous State-of-knowledge theory/approach)*

According to Dervin and Nilan (1986:23), Belkin focuses on people with problematic situations that are incomplete or limited in some way. In this context, users face gaps, uncertainties, and incoherence. In most cases, users are unable to specify what is needed to resolve the anomaly. In other words, an information need is present when a person realises that there is an anomaly in his or her state of knowledge. Information is thereby used to solve the impending problem.

Chang (1989) observes that, with the exception of different emphases, the situational contexts in all the above models are important in determining the needs for information. For instance, while Taylor emphasises the organisational context (work), Dervin is concerned with the individual context (in daily life). On the other hand, Belkin underpins the importance of users' interfaces with information retrieval systems (especially bibliographic information systems). More specifically, Chang goes on to elaborate on different information related dimensions. Firstly, in an academic environment (i.e. work), the needs for information are cognitive in nature, abstract, and formalised (i.e. recorded knowledge). While information seeking in this context is directly related to documents, information use is directed towards knowledge creation or innovation. Secondly, within the context of an individual (i.e. daily life), information needs are generated from affective needs. In this context, an information need is concrete in nature, as it is directed towards getting answers for immediate use. According to Chang, the information seeking process involves few, if any documents. Chang observes that information in this context is used to make sense of "life routine maintenance" and is more subjective.

All in all, (1989) Chang denotes that "needs for information are contextually bound" and that the "need for information is better understood through the users' problems or tasks at hand, the situations they encounter and the environments they are in".

In order to get a better understanding of the type of information needs based on "situational contexts" (i.e. work/occupation and the daily life activities of rural women), this study paid attention to the information needs and use of rural women in different categories (i.e. education, health, business/trade, agriculture and social welfare). Additionally, in an attempt to include principles from the "alternative paradigms" of Taylor and Dervin and assess the problem areas or motivating factors of rural women in their

search for information, the study probed the respondents using questions such as "the purpose/use of their information need?" For example, the purpose/use for information in agriculture by rural women in Kenya is motivated by the need for good harvests, farming, enhancing herd fertility, prevention of diseases, aesthetic values and for health reasons. Deductions that can therefore be made from this study are that some of the problems women face in agriculture in the rural areas of Kenya include good harvests, herd fertility, crop/plant diseases of various types etc. In other words, these problem areas are some of the driving factors behind the need for agricultural information amongst rural Kenyan women.

3.5 Information seeking behaviour

There are varying models that contribute to the conceptual definition of information seeking behaviour. For instance, Wilson's (1999) first model on information seeking behaviour argues that information-seeking behaviour results from the recognition of some need as perceived by the user. According to Wilson, information seeking behaviour may take forms that include making demands upon formal systems such as libraries, online services or information centres, estate agents, car sales agencies etc. Additionally, the user may seek information from other people in a bid to participate in a form of "information exchange". The author's second model on information seeking behaviour is based on propositions that an information need is not a primary need, but a secondary need that arises out of needs of a more basic kind (i.e. physiological, cognitive or affective) and that in an effort to discover information that satisfies a need, the enquirer is likely to encounter barriers of different kinds. The author suggests that barriers that impede the search for information normally arise out of the same set of contexts (i.e. political, economic and technological).

In this study, barriers that impede the search for information are evident in both Kenya and South Africa. For example, survey results indicate that impeding factors to the information-seeking behaviour of rural women in South Africa include exorbitant prices, time, computer illiteracy, poor roads and cultural taboos.

Ikoja-Odongo (2002:12) also confirms these propositions when he notes that rural women seek information that is within close proximity. The author further notes that rural women do not normally search for information from external sources or formal information institutions. Ikoja states that there is a close relationship between social factors and the information-seeking methods of women in the informal sector. According to the author, most women either seek information passively i.e. talking to people or listening to the radio, or actively i.e. asking friends, relatives and customers, and from other social networks.

In yet another definition of information seeking behaviour, Krikelas (1983:6-7) argues that, "Information seeking behaviour is defined as any activity of an individual that is undertaken to identify a message that satisfies a perceived need". According to Krikelas, information seeking begins when an individual perceives that the current state of possessed knowledge is less than that needed to deal with some problem. The author further illustrates that "while information is viewed as any stimulus that reduces uncertainty, need on the other hand can be defined as recognition of the existence of this uncertainty in the personal, or work related life of an individual."

Ocholla (1999:120) further argues that seeking is an expression of want, demand, need or requirement that entails looking for or fetching an item of information. The author states that information-seeking behaviour is a means by which uncertainty is reduced, thereby solving the information needs of an information consumer.

Alternatively, Kuhlthau (2005:2; 1991:1) brings in a new and holistic understanding to information seeking when she describes it as a process of seeking meaning, and not just finding and reproducing information. According to Kuhlthau, this process of construction involves exploration and formulation, and rarely proceeds directly from selection to collection. The author expounds this holistic experience as one that influences the decisions and choices a person makes throughout the process of information seeking. Kuhlthau further reasons that within this task model, the process of information seeking from the users' perspective may be thought of as a sequence of choices based on four criteria, namely: task, time, interest and availability. The author expounds this to mean that the person in the process of seeking information is concerned with the task to be accomplished, the time allotted, personal interest, and the amount of information available. Kuhlthau therefore believes that the information seeking process holistically involves six major stages namely:

- (i) Initiation – the point at which one becomes aware of a lack of knowledge. In this stage, uncertainty and apprehension are very commonly experienced by individuals
- (ii) Selection – when the general area or problem is identified giving way to optimism
- (iii) Exploration – during which inconsistent information is encountered giving way to varying degrees of confusion and doubt
- (iv) Formulation – a focused perspective is formed and confidence sets in
- (v) Collection – information that is relevant to the issue at hand is gathered and interest increases

(vi) *Presentation* – the search is completed with the person having developed a new understanding and ability to explain to others what they have learnt or directly put the learning to use

Chang (1989: 20) proposes that information seeking behaviour can be affected by contextual variables such as the user's organisation type, positional variables such as the type of work performed, and personal variables such as age and the level of education. Chang also observes that as the first step in seeking information, most people are in favour of oral communication. This is an effort to minimise individual and organisational time and money.

By the same token, Jarvelin and Ingwersen (2004:3-4)) describe information seeking behaviour as the acquisition of information from knowledge sources. For instance, one may ask a colleague through (in) formal channels such as through social interactions or through an information system. The authors go on to explain that actors (i.e. various professional groups of people or even lay people) usually operate in a dual context: that of information systems and that of the socio-organizational context. According to the authors, over time, the latter context influences and creates the information object and space and the information technology infrastructure. Notably, the authors introduce another aspect into the information seeking process, namely, "retrieval". The authors observe that actors/users performing their work tasks do not view information seeking and retrieval as separate aspects.

To this end, the authors suggest that there are eight dimensions involved in information seeking and retrieval. Accordingly, these dimensions are complex and depending on the goals of the study in question, involve various variables. They include:

(i) The work task dimension as stipulated by the organisation, collaboration between users, and the physical and system environment

- (ii) The search task dimension, which includes seeking and retrieval practices
- (iii) The actor/user dimension that takes into account the user's knowledge and procedural skills, motivation and emotions
- (iv) The perceived search task dimension as understood by the actor/user, including information need types and perceived information space
- (v) The document dimension, which includes document content and genres and collections in various languages and media, which may contain information relevant to the user
- (vi) The algorithmic search engine dimension, which covers the representation of documents, information or information needs. It also covers tools and support for query formulation and methods for matching document and query representation
- (vii) The algorithmic interface dimension, which covers tools for visualisation and the presentation of information objects, collections and their organization
- (viii) The access and interface dimension, which covers strategies for information access, and the interaction between the actor and the interface (both in social and system's contexts)

3.6 Information use

Bartlett and Tom (2005:3-4) argue that use of information is a factor that drives all other information behaviours, since it is the *ultimate purpose* for which information is needed and sought. Common questions that therefore arise during interviews include how the information will be used, or for what purpose it is sought.

Alternatively, in a comprehensive study of post-1978 literature on information needs and uses, Dervin and Nilan (1986) argue that most studies have left the terms "information needs" and "information uses" undefined. According to the authors, it is implied that by knowing how users

have or might use systems, one knows what their needs are or might be. Nevertheless, the authors define information use as ways in which people put answers to questions to work. For Kunz in Chang (1989:7), it is the actual frequency of use of particular information channels (journals, books, conferences etc.) by scientists and other professionals. For Chang (1989:7), information use can be defined as a behavioural form of interaction with either personal or non-personal information sources.

Menzel in Chang (1989:7) illustrates another approach towards understanding information use by stating:

“When approached from the point of view of the individual scientist, these (user studies) are studies of scientists communicating behaviour; when approached from the point of view of any communication medium (or service), they are user studies; when approached from the point of view of the scientific communication system, they are studies in the flow of information.”

Additionally, Chang (1989:30) observes that the key elements and process of human information behaviour can be conceptualised in the following ways:

(i) Information use is the destination of a process starting from a user with an information need going through information seeking, gathering, and evaluation stages. At the information seeking stage the user looks for an information system, such as a person or a library, where s/he explores alternative information sources, such as engaging in a conversation with a person, or use of indexes, journals etc. or all of them. S/he eventually has to evaluate the materials or information collected and decide how to use it/them.

(ii) Due to the dynamic aspects of human information behaviour, user needs may change during the information seeking process. A student intending to collect material on a given topic may alter his/her stance after discovering that there is simply too much information to deal with.

Concurrently, Amberlight Partners (2005) describe usability as theory, research and methods aimed at optimizing the effectiveness, efficiency and satisfaction with which a specified set of users can achieve a specified set of tasks. By the same token, Maguire and Bevan (2002) contend that user requirements are an integral part of information systems design, and are critical to the success of interactive systems. The authors further add that successful systems and products begin with an understanding of the needs and requirements of the users, and include the following steps:

(i) Gathering background information about the users, stakeholders and processes that currently take place. This involves all those who influence or are impacted by the system, as this helps to ensure that the needs of all those involved are taken into account.

(ii) User requirement analysis or secondary market research. This involves researching published sources, such as research reports, census data, and demographic information, which throw light upon the range of possible user markets.

(iii) Task analysis involves the study of what a user is required to do in terms of action, and/or cognitive processes to achieve a task. A detailed task analysis can be conducted to understand any current system, the information flows within it, the problems that people encounter, and opportunities that indicate user needs.

Maguire and Bevan (2002) also argue that user studies/information use is synonymous with "market research", which is the collection, analysis and

interpretation of quantitative and qualitative data. According to the authors, market research is conducted in order to gain knowledge about consumers, market niches and the effectiveness of marketing programs. The authors stipulate that within the context of system or device development, it may be used to establish the size of a market, and what users may want from a device. It is also ideal for investigating the role of a planned product, and in predicting how the intended market will respond to its introduction.

3.7 Critical Analysis of information -seeking behavior models

Mackenzie (2002:19) reiterates that many research-based models of information seeking behaviour are limited in their ability to describe everyday life information seeking (ELIS). According to the author, with the exception of Wilson's (1997) revised model which includes "passive attention" and " passive search", many current models of information behaviour focus mainly on active information seeking while neglecting less directed practices, for instance encountering information from an unexpected or incidental source of information.

Mackenzie (2002: 27) further illustrates that the process models of authors such as Ellis (1993) and Kuhlthau (1993) describe a systematic approach to problem solving that does not necessarily coincide with the complexities of information practices during ELIS.

Mackenzie (2002:26) identifies the following modes of information seeking:

- Active seeking, which involves practices that specifically seek out a previously identified source. This category includes authors such as Wilson (1997), Choo et al (2000).
- Active scanning, which involves practices such as browsing in locations that include offices or bookstores etc. This category corresponds with Wilson (1997) and Choo et al (2000).

- Non-directed monitoring, which involves serendipitously encountering a source e.g. finding a book on sale.
- By proxy, which refers to those occasions when one interacts with a source of information through the initiative of another agent. According to Mackenzie (2002:27), this mode of practice does not correspond with any of Choo et al's or Wilson's (1997) categories.

Despite this, Wilson's second model (devised in 1981 on information seeking behaviour) has its strengths, in that it proposes that the information needs of individuals are affected by different work roles, and that personal traits may inhibit or assist information seeking (Wilson, 1999:253). In this format, the model may be regarded as a source of hypotheses. According to the author, the weakness in the model lies in the fact that it lacks indication of the processes whereby context has its effect upon the person, nor of whether impediments have any effect upon the motivation of individuals to seek information.

In conclusion, this study is in favour of Wilson's (1999) second model on information seeking behaviour which is based upon the proposition that information need is not a primary need, but a secondary need that arises out of needs of a more basic kind (i.e. physiological, cognitive or affective) This view is confirmed by empirical results from this study, (see chapter 7.4) which indicate that most rural women seek information passively and do not necessarily go to formal institutions in search of information. Most rural women prefer to talk to friends and neighbours, or for that matter, listen to the radio when in search of information. For instance, in an effort to meet the physiological need for her ailing child, the rural woman is likely to face barriers such as high costs, distance, and time amongst other problems.

3.8 Summary

Information needs, information-seeking and information usage, are three interrelated concepts of information behaviour and there are varying models that contribute to their conceptual definitions.

In so far as needs are concerned, Morgan and King in Wilson (1981) argue that needs emerge from three kinds of motives namely:

- (i) Physiological motives (for example hunger and thirst)
- (ii) Unlearned motives (including curiosity and sensory stimulation) and
- (iii) Social motives (the desire for affiliation, approval or status, or aggression).

According to Wilson (1981) the aforementioned categories are interrelated and that the context of any one of these needs may be the person himself/herself, the role/demands of the person's work or life, or the environments (political, economic, technological etc) within which that life or work takes place.

Similarly, Wilson's (1999) first model on information seeking behavior argues that information-seeking behavior results from the recognition of some need as perceived by the user. According to Wilson, information seeking behavior may take forms that include making demands upon formal systems such as libraries, online services or information centers, estate agents, car sales agencies etc. Additionally, the user may seek information from other people in a bid to participate in a form of "information exchange". The author's second model on information seeking behavior is based on propositions that an information need is not a primary need, but a secondary need that arises out of needs of a more basic kind (i.e. physiological, cognitive or affective) and that in an effort to discover information that satisfies a need, the enquirer is likely to encounter barriers of different kinds

such exorbitant prices, time, computer illiteracy, poor roads and cultural taboos.

Other authors such as Krikelas (1983:6-7) argue that information seeking begins when an individual perceives that the current state of possessed knowledge is less than that needed to deal with some problem. Ocholla (1999:120) on the other hand denotes that seeking is an expression of want, demand, need or requirement that entails looking for or fetching an item of information.

Kuhlthau (2005:2; 1991:1) brings in a new and holistic understanding to information seeking when she describes it as a process of seeking meaning, and not just finding and reproducing information, and that the person in the process of seeking information is concerned with the task to be accomplished, the time allotted, personal interest, and the amount of information available.

Chang (1989: 20) proposes that information seeking behavior can be affected by contextual variables such as the user's organization type, positional variables such as the type of work performed, and personal variables such as age and the level of education. Chang also observes that as the first step in seeking information, most people are in favor of oral communication.

In so far as information use is concerned, Dervin and Nilan (1986), define information use as ways in which people put answers to questions to work. Additionally, Chang (1989:30) observes that the key elements and process of human information behavior can be conceptualized in the following ways:

- (i) Information use is the destination of a process starting from a user with an information need going through information seeking, gathering, and evaluation stages.

- (ii) Due to the dynamic aspects of human information behavior, user needs may change during the information seeking process.

The next chapter (4) elaborates on the theoretical foundation of the study.

CHAPTER FOUR

Conceptualising and Contextualising Social Technical Systems Theory, Systems Theory and Info mobilisation

4.1 Introduction

The purpose of this chapter is to examine Info-mobilisation as a platform for rural community development within the context of systems and social technical systems (STS) theories. While a system may be defined as an entity made up of interacting parts operating in an environment, the social technical systems theory (STS) comprises a method of viewing organisations that emphasises the inter-relatedness of social and technological dimensions. Info-mobilisation, on the other hand, focuses on processes of technological and social change and on the joint optimisation of human and technical processes within communities. *Of particular interest to this chapter is the fact that Info-mobilisation (an outgrowth of the general systems theory and socio-technical systems theory) underscores the importance of the "community" in development, especially given that the concept behind "community" is under valued and not given the attention it deserves.*

This chapter attempts to realise the following study objective:

- (i) To develop and propose a model for ICT development and application for rural women in Kenya.

Following this, the chapter attempts to answer the following research question:

- (i) How can ICT initiatives be developed and applied in rural development, especially amongst women in rural areas?

The "*how-to*" in the implementation programs of ICTs in rural development, particularly amongst rural African women, are an important consideration in this chapter. This is even more so as past trends in ICT development and implementation projects in Africa have revealed a lack of enthusiasm on the part of decision-makers, not to mention the lack of political will necessary to implement and sustain ICT rural development projects. Notably, while the application of ICTs in rural development in many African countries is still in its infancy, questions about the relevance of ICT projects in the wake of pressing issues such as poverty and disease are highly prevalent. It is therefore not surprising to find that ICT projects do not get the priority they deserve amongst policy and decision makers. However, as Harris (2004:3) rightfully points out, "there is still a widespread misunderstanding about how substantial benefits can be derived from ICTs... as much of the difficulty arises because the development community has yet to get in touch with the IT community in a meaningful dialogue that would help both parties."

Subsequently, the underlying questions of this chapter are: (i) how can project implementers relate ICTs to rural development, particularly in the case of African rural women? (ii) How can project implementers work with ICTs in order to bring about optimal outcomes?

4.2 The basis of Info – mobilisation

Harris (2004) explains that the methodology behind *Info-mobilisation* is based on the socio-technical systems theory and the general systems theory and its application to the design of information systems in organisational settings. Consequently, as the aforementioned theories are fundamental to understanding info-mobilisation, this chapter begins by analysing their concepts. Harris underpins the fact that within the socio-technical systems theory, separate efforts to optimise the technical system and the social

system invariably lead to sub-optimal results, and can even be infeasible. According to Harris, the information system and its context must be studied, understood and managed together, and not separately. In applying these theories to rural communities in developing countries, Harris argues that community actions are influenced more by social factors and individual choices, and less by organisational actions.

4.3 Systems theory

Universiteit Twente (2004:1) defines systems theory as the trans-disciplinary study of the abstract organisation of phenomena, independent of their substance, type, spatial or temporal scale of existence. According to Universiteit Twente, the system consists of four parts, namely: (i) objects, i.e. elements, parts or variables; (ii) attributes, i.e. the qualities or properties of the system; (iii) internal relationships between its objects; (iv) and the systems that exist in an environment.

By the same token, Leonard and Beer (1994:4) denote that a system may be defined "as an entity made up of interacting parts operating in an environment". The authors argue that a system does not exist until its boundaries have been defined according to a purpose or set of criteria. For instance, departments in production and accounting within an organisation perceive boundaries depending on the functions they perform. Leonard and Beer (1994:5) further explain that the systems approach means placing emphasis on the "big picture", or the whole, and considering the functions of systems' parts based on their relations with one another and within the system's larger context. These authors state that the systems approach has gone by different names, such as systems thinking, general systems research, cybernetics, management science and operational research. Of importance here is that all these approaches share the concept of a multidisciplinary approach to defining and solving complex, dynamic and

interactive problems. This is as opposed to reductionism, which first considers the elements in isolation and then in combination.

For example, in table 3, Leonard and Beer (1994:4-5) illustrate that the systems approach regards everything as ultimately connected to everything else. According to these authors, the most favourable outcome for the whole system is not achieved by each sub-system selecting its best option, but by coordinating their actives. In other words, A causes B causes C causes D causes A. i.e. a circular causality. However, in the reductionist approach, elements are first considered in isolation and then in combination. i.e. A causes B. i.e. a linear causality. In other words, the conclusions drawn at one level may be quite different from those drawn at the next level. The authors further explain that in the reductionist approach, each subsystem selects its own best option.

Table 3 Reductionist and Systems Approach

Source: Leonard and Beer (1994:1)

Reductionist approach:	Systems approach:
Focuses on parts	Focuses on wholes
Linear causality (A causes B)	Circular causality (A causes B causes C causes A)
Observer Status objective	Observer status subjective
Context not very relevant	Context highly relevant
One truth or best answer	Multiple truths and answers
Externalities not important	Externalities important
Problems solved	Problems dissolved

Anderson and Carter in Scheele (2005: 112) define a system as an *organised whole made up of components that interact in distinct ways*. Further a field, Heylighen and Joslyn (1992:1) contend that systems theory investigates both the principles common to all complex entities, and the (usually mathematical) models that can be used to describe them. The authors explain that systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy, and further developed by Ross Ashby. Of importance here is von Bertalanffy's reaction against reductionism and his attempt to revive the unity of science. Bertalanffy emphasises that real systems are open to, and interact with, their environments, and can acquire qualitatively new properties through emergence, resulting in continual evolution. Bertalanffy does not advocate for the reduction of an entity (e.g. the human body) to the sum of its parts or elements (e.g. organs or cells). Rather, he suggests that systems theory should focus on the arrangement of, and relations between, the parts that create a whole (cf. holism). This particular organisation determines a system independent of the concrete substance of its elements (e.g. particles, cells, transistors, people, etc.). Accordingly, the same concepts and principles of this organisation underlie different disciplines (physics, biology, technology, sociology, etc.), providing a basis for their unification. Systems concepts include: system-environment boundary, input, output, process, state, hierarchy, goal-directness, and information.

Shedding more light into this concept of systems theory, Ropohl (1999:4) observes that 'system' was derived from the ancient word "holon" (i.e. whole) as defined by the Greek philosopher Aristotle, and that there are three different contemporary interpretations of the word 'system'. The first of these is the structural concept, which depicts a system as a set of elements and the set of relations between these elements. Following this is the functional concept, in which a system is an entity, sometimes called a

black box, which transforms inputs into outputs. Thirdly, the system is hierarchical, i.e. a subsystem of a more extensive super-system.

4.4 Socio-Technical Systems Theory (STST)

According to Mitchell and Nault (2003:3), the term "socio-technical system", was coined to describe a method of viewing organisations that emphasises the inter-relatedness of social and technological dimensions. The STS (socio-technical system) draws from the open systems theory in that parts of an organisation are interrelated. It is therefore important to integrate the social requirements of working individuals with the technical requirements needed to keep a dynamic work environment functional.

Mitchell and Nault (2003:1) point out that the STS originated in studies of mechanisation in British coal-mines. Besides the work processes that constitute two separate dimensions (one social, the other technical), the underlying principle behind the STS is that of joint optimisation. On the other hand, Einjnatten in Majchrzak and Borys (2001:219-220) illustrates that the generality of the STS supports other alternative views, which include: the classical approach of the Tavistock Institute, the participative design approach, the democratic dialogue approach, and the integrated organisational renewal approach.

Historically, Scacchi (2003:3) explains that the Tavistock Institute for human relations in London originated the concept and practice of Socio-Technical Systems (STS) in the 1940's. Scacchi (2003: 1) illustrates that the STS design is concerned with promoting the direct participation of end-users in the information design system. The author further explains that STS's are in contrast to traditional systems or software engineering design methods that focus mainly on the activities of system engineers. According to Scacchi (2003:3), projects that have included the STS design include projects in manufacturing organisations and office work (such as Ehn and Kyng 1987, Greenbaum and Kyng 1991, Kling 1978, Schuler and Namioka 1993). These

projects have become associated with information system development and adoption efforts that involve the participation of end-users in the design process. Accordingly, some of the terms used to denote the above propositions include:

1. user involvement
2. participatory design
3. user satisfaction
4. human relations
5. workplace democracy (for the political dimension)

Other authors such as Ropohl (1999:1) further point out that the concept of the socio-technical system was established in-order to stress the reciprocal interrelationship between humans and machines. Additionally, STS helps to foster the program of shaping both technical and social conditions of work, in such a way that efficiency and humanity do not contradict each other.

As further assented to by Amberlight Partners (2005), technology does not exist and operate in isolation from the rest of the world. For instance, a system like computing technology is part of a wider, 'socio-technical' system comprising humans, human activity, spaces, artefacts, tools and communications media.

4.5 Info – mobilisation

In the light of the aforementioned concepts of systems and STS theories, Harris (2004) describes *Info-mobilisation* as an organic process of change in which collaborative groups discover and explore problems and address solutions together. Harris explains that *Info-mobilisation* is a form of interactive development that caters for a collaborative learning process, based on the evolving needs of a community. The author goes on to explain

that Info-mobilisation involves adaptive learning, community learning, and the alignment of social and technological systems, participative values, and social and stakeholder groups.

More importantly, Harris argues that the applicability of a socially based approach to information systems in communities arises from information technology being an intellectual, as opposed to an industrial, technology. The overall view by Harris (2002) suggests that the development community should look toward the corporate world in order to understand the paths that they have traversed in adopting ICT. According to the author, *"it is the program that must be developed and ICT placed within context, rather than the familiar idea of 'build it' and the applications will naturally flow; or, build it and then let's see what evolves serendipitously"* (Harris, 2002:1). Accordingly, the concept of "community" is under-stressed and not given the attention it deserves. To this end, Harris (2004:35-38) focuses and expounds on three important approaches in which he analyses and gives insights into the info-mobilisation theory:

1. Info mobilisation is concerned with the information requirements of communities. It addresses the design, delivery and utilisation of community information systems (Harris: 2004:38).
2. ICTs can only have optimal impacts in rural communities if they are imbedded within other community development initiatives (Harris, 2004:38).
3. The success of ICTs in rural development yields better results when social, political and economic factors, and varying modes of communication, are taken into account, and used during implementation (Harris 2004:35-36).

4.5.1 Design, delivery and utilisation of community information systems

This first approach takes into consideration the following key factors:

4.5.1.1 *Defining community information requirements*

According to Harris (2004:38), an important aspect of Info-mobilisation involves defining community information requirements based on needs and priorities that have been expressed by the communities themselves. The author explains that in order to sustain service delivery, it is essential to ensure the continuous flow of information that communities find useful and useable. This process involves adapting to evolving community needs, proactively searching for new sources of useful information, and alerting the community about the value of information. According to the author, focus should be more on information services, and less on technology.

This view is shared by authors such as Solange and Momo (2005:6), who underscore the fact that information is not only power, but also the prioritization of actions needed to help women have access to information. According to the authors, these actions require the need to first always conduct an area study before any project that involves ICTs is implemented. This enables the collection of socio-economic data and the identification of information requirements (education, family planning, legal matters, etc.).

The study at hand sought to establish the information requirements of rural women based on their individual needs and purposes.

4.5.1.2 *Igniting community aspirations and empowering communities with appropriate skills for fostering local development, which is information-based*

The UNDP in Harris (2004: 28) reports that, "*the full realisation of the potential of ICTs requires skills, training, and individual and institutional capacity among users and beneficiaries*". Additionally, Harris (2004:28) adds that ICTs in the form of multimedia community centres/telecentres,

especially at rural level, can act as nodes for community connectivity, local capacity building, content development and communication, and serve as hubs for applications such as distance education, telemedicine, support for small, medium-sized and micro-credit enterprises, the promotion of electronic commerce, environmental management, and the empowerment of women and the youth. A good example of such a venture is the village information shops in Pondicherry, India, which use ICTs to build awareness in poor communities of existing and available government programs and entitlements. Accordingly, these information shops have a database of more than 100 such entitlements and a list of ultra-poor people that the government maintains.

The study sought to determine not only the type of skills/training required, but also sustainable development activities that are able to empower rural women and fight poverty. Good examples include Grameen Telecom (2005), and also the Bangladesh mobile help line for women, better known as Pallitathya (Association for Progressive Communication: 2005).

4.5.1.3 Expanding a community's social capital through enhanced access to communication facilities and information resources.

According to Harris (2004), social capital refers to the features of a social organisation, such as networks, norms and social trusts, which facilitate co-ordination and co-operation for mutual benefit. This can be effectively achieved through the use of ICTs that create and sustain online and offline networks which introduce and interconnect people working with similar goals in mind. In this way, ICTs can be used as an advocacy tool. Similarly, ICTs can be used to spark catalytic change in their respective communities. An example is given of a woman in Mongolia who single handedly runs an NGO supporting women's micro-enterprises. With the help of a local tele-centre, the woman was able to contact a donor agency in the UK and receive an award of US \$ 10,000, assisting her in her efforts.

This study sought to determine how ICTs can be used as an advocacy tool amongst women by sighting examples in other countries/areas that have been successful and seen to be working.

4.5.1.4 Infusing enhanced capabilities for information access within communities

According to Harris (2004), access to technologies and information has to be planned, organised and well managed. This is likely to be in the form of shared access, perhaps through existing institutions such as libraries or post offices, or through the creation of new institutions such as multipurpose community tele-centres. However, in so far as multipurpose community centres are concerned, careful attention must be given not only to envisaged development activities, but also to the management, relevance of the information repositories and telecommunication infrastructure of the area. Lessons learnt from a study carried out by Parkinson (2005: 40-41) in Bhamshela (about two hours drive from Durban), highlighted a need for locally relevant services such as voice telephony and job related computer skills. Snyman and Snyman (2003:10) also argue that although MPCCs form the back bone of development, communication and the dissemination of information to needy communities, they lack effective management, well-maintained and working equipment, relevant information and much advocated access to the internet "gateway". Similarly, Maepa and Mphalele (2003:3) attest to the fact that tele-centres should be established within the "needs of rural communities" in areas such as education, health, agriculture, business development, and governance, among others.

The study sought to determine existing institutions that currently exist in rural areas, such as multipurpose centres, and how best they can be established and used to enhance shared access to information.

4.5.1.5 *Achieving the sustainability of financing, service delivery and operating functionality.*

Because most ICT projects are recent and experimental, experience with their sustainability is limited. According to Best and Maclay in Harris (2004:44), the following actions are prescribed:

1. Keep costs low
 - Reduce capital costs with new devices and wireless applications
 - Use appropriate technologies to reduce recurrent costs
 - Generate revenue from diverse fees and services
 - Focus first on core communication applications
 - Promote gradual growth for the revenue sources
2. Create jobs and revenue with remote ICT-enabled services (e.g., transcription of hard copy records)
 - Benefit from network effects, scope and scale
 - Aggregate markets and leverage the benefits of large networks
 - Exploit economies of scale and scope by promoting larger networks
 - Design context appropriate business models
 - Create rural service providers for internet, computing and telephony
 - Add businesses to tele-centers
 - Promote rural-urban cooperation
 - Guard against potentially negative externalities e.g. location, Marketing/awareness, and staff composition
3. Support rural access with policy
 - (i) Adapt to the dynamics of rural markets and limited competition
 - (ii) Remove regulatory barriers to rural services
 - (iii) Promote universal access policies and support incentives
 - (iv) Require and enforce interconnection
 - (v) Beware of time metered calling charges
 - (vi) Use Voice over IP (VoIP) to promote competition

- (vii) End spectrum allocation regimes that punish rural wireless networks
- (viii) Improve the overall business environment, e.g. for credit
- (ix) Build local capacity

In support of the aforementioned views, the World Bank (2002:2-3) adds that an increase in the sustainability of ICTs can be achieved through policies that increase connectivity and take into account the constraints facing poor people. According to the World Bank, competition between telecommunication companies can slash service costs and improve access to the technology in question. The World Bank argues that since large telecom operators tend to limit their operations to high income urban areas, privatization should be opened up to allow small entrepreneurs to supply telecomm services to rural areas. Through "regulation and subsidies, private operators can be invited to bid to provide services in areas that are not commercially viable, in return for a subsidy financed from a Universal access fund".

The study sought to determine how to achieve financial, service and operational sustainability, and in so doing, how to keep the cost of ICTs low in-order to promote their usage, create jobs and support rural access with policy.

4.5.1.6 Ensuring that benefits arising are not usurped by the existing elite, and are equitably disseminated among socially and economically disadvantaged groups

According to Marker et al. in Harris (2004:18), within populations of poor people, disadvantaged and marginalized sections of society usually face impediments to using, or making good use of, ICTs and other resources. Women in developing countries in particular tend to be poorer, face greater social constraints, and are less likely to be educated or literate than men.

Such groups usually require special assistance and attention in order to benefit from programs targeted at poor people. For instance, Hafkin (2002:1) argues that women are not likely to benefit equitably from ICT projects unless special efforts have been made to: (i) identify their situation and needs; (ii) and take effective action to incorporate their active participation in project implementation and development. Women not only have less access to the technology itself, but are also financially limited and have less time to learn and use the technology. Hafkin also argues that women are absent from decision-making positions in information technology and in developing countries.

As the majority of those who reside in the rural areas of Africa are women, this study sought to determine ways and means in which special assistance could be accorded to such groups of individuals' in-order to promote development.

4.5.1.7 Extending and intensifying existing development programs that carry significant potential for additional community benefit from enhanced information management capabilities that are based on ICTs.

An example of introducing telecommunication services into a rural community whilst offering them income generating viability is that of Grameen Telecom (2005). The organization combines bank experience (in this case, Grameen Bank) with village based micro - enterprises, the latest digital wireless technology, Public Call Offices (PCOs) and privately operated phone-centers. This concept has proven successful as the project benefits all parties concerned whilst catering for the needs of the communities.

The study also sought to establish suitable initiatives that can be adopted by development agents in order to enhance information management capabilities that are based on ICTs within rural communities.

4.5.2 ICTs can only have optimal impacts in rural communities if they are imbedded within other community development initiatives (Harris, 2004:38).

This second approach takes into consideration the following factors:

4.5.2.1 Familiarising communities with the current use and sources of information, as well as with existing gaps

According to Harris (2004), the implication of Info-mobilisation in the implementation of ICTs, is that incremental and interactive development allows for a collaborative learning process based on evolving community needs. According to the author, household surveys, community focus groups, orientation sessions, and demonstrations, all play a role in empowering communities.

This study sought to determine alternative media and sources of information in order to facilitate the implementation of ICT projects more effectively and efficiently.

4.5.2.2 Sensitising communities toward the existence and accessibility of abundant information resources and to the capabilities of ICTs for accessing and manipulating information

Gurumurthy (2004: 2) remarks that although ICTs pose a number of challenges and possibilities, they have been used by many as tools for social transformation and gender equality. According to the author, e-commerce initiatives link women artisans directly to global markets through the internet and support their activities with market and product related information. Other capabilities of ICTs include information sharing, dialogue through e-mail, and e-governance programmes initiated by some government services to make information more accessible to its citizens.

4.5.2.3 Empowering communities with information literacy and the skills necessary to master new media, the Internet and multimedia

In order to create a demand-driven ICT consumer community in rural areas, hindrances to accessibility must be significantly reduced, either before or during the provision of the technology. This necessitates training and skill enhancement initiatives within other participatory development programs such as focus group discussions, direct interviews and workshops (Bessette, 2004; Harris 2004:39). In support of this view, authors such as Ballantyne, Labelle and Rudgard (2000) also argue that the use of ICTs is limited by lack of awareness, insufficient skills and training, and a shortage of the capital resources required to purchase and maintain equipment.

The study sought to determine the types of skills and capacity building techniques required by rural women so as to promote the use and management of ICT projects.

4.5.2.4 Encouraging the collection, classification, preservation and dissemination of indigenous knowledge and cultural information artefacts, and fostering appropriate local mechanisms for sustaining the equipment, services and operations of community based ICTs. (Harris: 2004:38)

Harris (2004) stipulates that traditional remedies should be recorded in databases and afforded protection from foreign patent applications. The author cites examples of stringent rules imposed by the state government of Sarawak, Malaysia, over the collection of flora samples of a particular tree that has promising results for an HIV/AIDS cure. Another example is the Honey Bee network in India, which collects local innovations, inventions and remedies, stores them online, and helps owners obtain incomes through

local patents and the commercialization of inventions. Reportedly, the database contains more than 1,300 innovations. The Kelabit group of Sarawak is also recording their oral history in a database of stories told by senior citizens, and are using computers to assemble genealogical records.

The study sought to encourage the creation and the preservation of indigenous knowledge systems as cultural artefacts amongst rural women.

4.5.3 The success of ICTs in rural development yields better results when social, political and economic factors and varying modes of communication are taken into account, and used in implementation.

This third approach considers the following main factors:

4.5.3.1 ICTs alone are insufficient for significant benefits to emerge

Harris (2004:35-36) observes that ICTs on their own cannot be expected to result in any reasonable outcomes without a development strategy. The voice of the poor is important in combating poverty and should be incorporated in ICT approaches toward poverty alleviation. Addressing the needs of the most marginalized, especially women and children, is vital.

The study sought to ascertain that the voice of marginalized rural women and their needs are important if development is to be achieved in rural areas.

4.5.3.2 ICTs will not transform bad development into good development, but they can make good development better

ICTs act as an amplifier of underlying processes. What makes development work well will be made to work better using ICTs. Harris (2004:35) argues that even when such infrastructure is in place, difficulties arise when ICTs are too costly to use, too far to access and poorly maintained. In Kenya for

instance, there were only 10 telephone lines per 1000 people overall, and 77 per 1000 in the capital Nairobi (World Bank, 2002). Kenya's Gross Domestic Product (GDP) grew by only 1.5% in 2002. As maintained by the report, as long as limited telephone access continues, the gulf that divides developing nations such as Kenya from the developed world will continue to grow. In support of these views, Mudhai (2004) stipulates that Kenya has been slow to reform its ICT sector as a result of monopoly, corruption and under-investment.

The study sought to ascertain that poverty, and not ICTs, is the problem and that ICTs have the ability to enhance development.

4.5.3.3 Effective applications of ICTs comprise both technological and information related infrastructure.

According to the Clinton/Gore report in Hanseth and Monteiro (1998:5), a National Information Infrastructure is the sum of more than just physical facilities used to transmit, store, process, and display voice, data and images. It encompasses:

1. Equipment such as cameras, scanners, keyboards, telephones, fax machines, computers, switches, compact discs, video and audio tapes, cable wire, satellites, optical fibre transmission lines, microwave nets, televisions, monitors and printers .
2. The information itself, in the form of video programming, scientific or business databases, images, sound recordings, libraries, archives etc.
3. Applications and software that allow users to access, manipulate and organize information.
4. The network standards and transmission codes that facilitate connectivity and interoperation.

5. The people, who create the information, develop applications and services, construct the facilities and train others to tap into the above.

In other words, the information infrastructure includes all that is required to make ICTs relevant within their context, including all sources of information and its clients. Harris (2004) reiterates that while ICTs can be effective tools for tackling poverty, the spread of technology should not be the primary objective as both information and technological infrastructure play a vital role in national development. The author further states that in rural settings in developing countries (where the vast majority of the poor live), it is always a challenge to install technological infrastructure. However, this task is relatively simple when compared to establishing an information infrastructure.

Through the mapping and auditing of ICTs in both Kenya and South Africa, this study sought to establish the extent to which physical and information infrastructures influence the flow of information amongst rural women.

4.5.3.4 The application of ICTs in the absence of a development strategy that makes effective use of them inevitably results in sub-optimal outcomes

Harris (2004: 12) argues that "*the digital divide is the result rather than the cause of poverty*", and that efforts to "*bridge the digital divide*" and increase access to ICTs, unless rooted in, and subordinate to, a broader combat strategy against poverty, risk diverting attention and resources from addressing its underlying causes, such as unfair trade policies, corruption, bad governance etc.

The study sought to explore and unearth issues in African rural development programs that consequently affect the effective use and application of ICTs to development programs.

4.5.3.5 Embed community based ICT services within existing economic governance and social structures

One of the ways in which a project can prioritize actions needed to help women have access to information is by using existing infrastructure as an entry point into a community [e.g. a school, a church, etc] (Solange and Momo, 2005:6).

This study sought to determine how best to diffuse and implement ICT projects amongst rural women.

4.6 Application of the Info-mobilisation theory in existing projects

The fundamental basis of the Info-mobilisation theory is the community, as it takes centre stage in resource management. By actively participating in research, identifying their own needs, sharing information and collectively resolving their problems, the community is encouraged to play a participatory role in defining their own goals toward development initiatives. In case studies such as the "village information shops" in Pondicherry, India (Harris 2004: 53), and the e-Bario project in Sarawak, Malaysia (Harris 2004: 51), there is extensive application of Participatory Action Research Techniques (PAR). Given this fact, this section evaluates projects that have, in effect, taken this approach in the design and implementation of local initiatives with a bias toward ICT use.

According to White et al (2004:3), PAR is a collaborative approach to conducting research that has recently emerged as a paradigm for bridging science and clinical science. To strengthen this definition, the Centre for Cultural Understanding and Change [CCUC] (2003: 3), denotes that *participatory research means: (i) the community is always the focal point; (ii) the community shares power with researchers; (iii) the community is*

able to bridge the gap between themselves and other groups; (iv) other store houses of information are shared before the researcher leaves; (v) the community recognises their own and the researchers knowledge and wisdom; (v) and the community can be trained and also conduct research where necessary.

White et al (2004:3) argue that other benefits involving participants include the development of more pertinent research questions, user-friendly instruments, acceptable interventions, thorough data analysis and effective dissemination strategies. The authors further illustrate that using the PAR approach could improve the credibility and validity of research, increase the utilisation and sustainability of research-based programs, and enhance consumer empowerment. PAR has been used in anthropology, applied behaviour analysis, business, community psychology, disability research, education, epidemiology, and health promotion.

The Regional Community Forestry Training Centre [Recoftc] (2006:1) illustrates that local people's participation has been increasingly advocated as a desirable approach for the management of natural resources. Recoftc further illustrates that action research is a process of learning in-order to be more effective in future situations. It enables communities to not only share information and their resources' management experiences with external support agencies, but also increase their potential for collective action. Additionally, it helps communities collectively resolve problems and have control over the management of their own resources while sharing responsibilities and making decisions.

A widely quoted project that has generated remarkable developmental success is the "Village Information shops", Pondicherry, of the Swaminathan Research foundation, India. These village information shops consist of 10 villages networked within a hybrid wired and wireless network of public telecentres equipped with PC's, telephones, VHF duplex radio devises and e-mail connectivity through dial-up telephone lines, which cater for voice and data transfer. Through initial surveys, a highly detailed picture of the nature of

poverty within the villages enabled the definition of a meticulous programme for information provisions targeting improved well being. What is important here is that the telecentres are established on the principal of community ownership, and as development tools, and not as technology 'demonstrators'. These village shops extensively apply Participatory Action Research (PAR) techniques (Harris, 2004:53)

In this project, Vasanth and Kumaran (1988:7) narrate that while the importance of ICTs in the development of rural areas is crucial, in the application of technology, we must relate them to our own social, economic and demographic circumstances. According to Swaminathan (in Vasanth and Kumaran 1988:7), a holistic approach is necessary before technologies are introduced. Professor Swaminathan further explains that technology transfer must involve the integration and synergy of initiatives that address gender, social and cultural barriers, and lead to increased jobs, increased income and increased food, with knowledge empowerment being a vital ingredient.

The PAR approach has been used in this project as a means of engaging with the community and developing relevant information supplies. Insistence on equity, gender and caste has directed benefits to the very poor. Community benefits include employment opportunities, local entrepreneurial development, health, education, fishing and agricultural support, and government entitlements.

The Samaikya Agritech Support Centre is yet another project that has demonstrated that development information can be sold, and that a potential source of revenue exists for tele-centres that provide information services for which customers are prepared to pay. Samaikya Agritech started its operations in 2000 and operates 18 Agritech centres, which are manned by qualified agricultural graduates. Farmers register by the field of operation, and receive support services that are specific to the fields registered. This programme was conceived as a self-financing, profit making activity from the outset. By the end of 2001, the company had more than 1,200 registered farmers (Harris 2004:63).

The DFID/FAO/ODI (2002:6) stipulates that the focus on rural livelihoods in India is on improving the exchange between diverse decentralised agencies involved in rural development, in particular those involved in poverty alleviation, food, security and land reform. Information systems geared towards rural communities need to provide a range of content such as market prices, small enterprise development and economics, information on government schemes, and the weather.

The e-Bario research project in Sarawek, Malaysia, is another example of a project that involves the participation of its communities. The objective of this project was to provide opportunities for remote and rural communities in Sarawek to develop socially, culturally and economically, from the deployment of ICTs. Of interest here is that the project is run by academics in collaboration with the resident community. Through Participatory Action Research, a development agenda was defined before ICTs were introduced to the community. Today, both primary and lower secondary schools in Sarawek are equipped with computer laboratories and Internet access. The community tele-centre is functional, enabling email exchanges and web browsing. A development agenda has been set with the community for implementation, and includes e-commerce for Bario rice (a delicacy). The success of this project is linked to the close collaboration between the research team and the community and the use of PAR as a methodological guide (ITU: 2006; Harris, 2004:51)

4.7 Critical reviews of socio-technical systems

In a critical review of an article on Feenberg in: "Questioning Technology", Kellner (1999:1), illustrates that technology is a major constituent of contemporary society and is intimately connected with politics, economics,

culture and all forms of social and personal life. Kellner notes that while technology is seen as a major power in contemporary society, it is often stated to be incompatible with democracy (Kellner, 1999:2). The author however stresses that there can be no genuinely democratic and progressive political change without technological change, and without the reconstruction of technology and vice-versa. In an effort to dispel pessimistic views regarding technology, Kellner (1999:3-4) cites examples to prove that it can be democratised to fulfil human needs, for example how the French people transformed the Minitel Videotext System from an Information database, to an interactive system providing weather and railway information.

Scacchi (2003:4) argues that the classic prescription for user involvement in participatory design says little about which users, user representatives, or customers are chosen in practice to participate in system design efforts. According to the author, unless users are trained or already skilled in the design of information systems, their participation may yield little or no results. Scacchi also adds that the whole notion of what is and isn't part of an information "system" is being called into question. According to Scacchi, information systems should be viewed as systems embedded in an organisational workplace as a 'web of computing' or 'Socio-technical interaction network' (STIN). The author argues that in this way, attention would be drawn to the web of socio-technical relations that interline people in particular settings to a situated configuration of IT and organisational resources that must be collectively mobilised to meet evolving user needs.

Asaro (2000:279-280), on the other hand, argues that the knowledge of users' requirements has not always been straightforward. For instance, uncovering tacit skills or embodied routines takes time, and is not always easily translated to individuals outside the workplace. Asaro explains that notions of user representation are further complicated by the fact that researchers find it difficult to communicate technical systems design to users

who lack technical knowledge. Due to this inherent problem between researchers and users, Asaro underscores the need for Joint application design (JAD), visual aids and the importance of "scribes", who record lists of priorities. According to the author, these approaches have today been introduced in meetings between researchers and users. The author further argues that the problem of communicating the needs of users finds solace in participatory design or Joint Application Design (JAD). In the JAD approach, users are involved in meetings during the requirements gathering phase of the systems development cycle (SDLC). On the whole, participatory design has been argued to stand as a model of how critical theory might approach technology.

4.8 Summary

As a theoretical foundation of the study, this chapter sheds light into three concepts namely: systems, social technical systems theory and info mobilisation.

As observed by the Greek philosopher Aristotle, the word system was derived from the word "holon" and has three different interpretations. The first is the structural concept, which depicts a system as a set of elements and the set of relations between these elements. This is followed the functional concept, in which a system is an entity, sometimes called a black box, which transforms inputs into outputs. Thirdly, the system is hierarchical, i.e. a subsystem of a more extensive super-system.

The socio- technical system on the other hand emphasises the inter-relatedness of social and technological dimensions. The STS (socio-technical system) draws from the open systems theory in that parts of an organisation are interrelated. It is therefore important to integrate the social requirements of working individuals with the technical requirements needed

to keep a dynamic work environment functional.

Info-mobilisation is a form of interactive development that involves adaptive learning, community learning, the alignment of social and technological systems, participative values, and social and stakeholder groups. Additionally, info mobilization focuses and expounds on three important approaches namely:

- 1) The design, delivery and utilisation of community information systems.
i.e. Information requirements of communities
- 2) The optimal impacts of ICTs in rural communities
- 3) The importance of social, political and economic factors, and varying modes of communication during implementation of ICT projects

The chapter confirms that ICTs that are assigned to communities that have not been Info-mobilized are destined to deliver sub-optimal outcomes. Info-mobilisation uses various participatory mechanisms for community engagement, including: household surveys, community focus groups, group dynamics, user committees, training, and orientation sessions. Through these techniques, the community gets involved in learning about its information needs and how to satisfy them in an iterative process of action, evaluation and learning.

The next chapter (five) deals with Gender, ICTs and development

CHAPTER FIVE

GENDER, ICTS AND DEVELOPMENT

5.1 Introduction

The previous chapter examined Info-mobilisation as a platform for rural community development within the context of systems and social technical systems (STS) theories.

This chapter reviews the literature related to the entire study. This involves the systematic identification, location and analysis of documents containing information related to the research problem under investigation (Mgenda and Mgenda, 1999:29). In this connection, the chapter reviews literature in the following areas: Women's information and ICT needs; Gender, ICTs and sustainable development; ICT impacts and challenges; Telecommunication and Information services for the poor; Mobiles and poverty reduction; The role and use of rural radio in Africa; How-to incorporate gender in projects; Overcoming the gender digital divide; Gender equality and empowering women in the Millennium Development Goals; ICT impact and use in women's empowerment and advancement and Participatory design.

5.2 Women's information and ICT needs

Experience indicates that information and communication technologies (ICTs) have become an integral part of the development process around the world. *Recognising the potential benefits of ICTs and the fundamental role played by women in development, many organisations have begun trying to facilitate women's access to information and ICTs (Huyer, 1997:4).* However, women's access to ICTs cannot therefore be assumed to "naturally" occur. *Women's needs for information are structured according to gender specific roles and responsibilities, which in turn influence their use of, and response to, ICTs.*

Although the computer and e-mail communication era has not found easy assimilation amongst women (Nair: 2002:1), Huyer (1997: 14) underscores the fact that "*when women can understand and experience the benefits of ICTs, they are quick to use them*". This need is catapulted by specific information requirements/needs using given ICTs. Huyer further argues that there has been little research done on women's information needs and access to appropriate information in developing countries. In this respect, in order to facilitate access for different categories of women, ICTs need to be located in other local institutions to which women have open and equal access, such as NGO's, women's employment centres, local health institutions, libraries, and even churches (Huyer:1997:14).

Hafkin and Taggart (2001:6) argue that "the single most important factor in improving the ability of women in developing countries to take full advantage of the opportunities offered by information technology is more education, at all levels from literacy through scientific and technological education". Hence, women are poorly placed to benefit from the knowledge economy because they have less access to scientific and technical education, skills training, and development.

Additionally, Hafkin (2002:1) explains that women are not likely to benefit equitably from ICT projects unless special efforts have been made to: (i) identify their situation and needs; and (ii) take effective action in order to incorporate their active participation in project implementation and development. As such, women not only have less access to the technology itself, but also find themselves financially limited and with less time to learn and use the technology. The author also argues that women are absent from decision-making positions in information technology in developing countries.

Marker, Wallace and Mcnamara (2002:6) underscore the fact that access to ICTs should not be seen as an end in itself. The authors argue that if ICTs

are properly deployed, they have enormous potential as tools that increase information flows and empower people.

5.3 Gender, ICTs and sustainable development

Rural economic development can be transformed from a survivalist genre into a more profitable one using technology that enables, enhances, and aids economic activities (The World Bank, 2001). The use of information and communication technology (ICT) is expected to bring about a change in the development of rural communities. Community development can be defined as a global, dynamic, iterative, and interactive process that attempts to satisfy basic needs, such as education, health, employment and entrepreneurship, natural resource management, and governance. However, the differential influence of technology on various sectors of society is often ignored. For example, feminist scholarship has pointed to women's exclusion from science, and also from the creation, design and use of technology (Gurumurthy, 2004).

Information Technology can offer significant opportunities for virtually all women in developing countries, but most women within developing countries find themselves further removed from the information age than the men whose poverty they share. If the access to and use of these technologies is directly linked to social and economic development, then it is imperative to ensure that women in developing countries understand the significance of technologies and how to use them (Hafkin and Taggart, 2001). The UNDP (2002) reinforces the notion that ICT's 'promise' of substantial cost savings and potential to reach new markets make them attractive to women. The fact that the majority of the rural poor in developing countries are women, who generally experience more difficulties in accessing ICTs than men, raises concerns about the ability of ICTs to significantly impact on country development if women's ICT needs are not specifically addressed.

5.4 ICT impacts and Challenges

The Organization for Economic Cooperation and Development [OECD] (2004:9-10) denotes "that capital deepening through investment in ICT establishes the infrastructure for the use of ICT (the ICT networks) and provides productive equipment and software to businesses. This is because investment mechanically adds to the capital available to workers, thereby contributing to labour productivity growth". For instance, ICT accounted for between 0.3 and 0.8 percentage points of growth in GDP and labour productivity over the 1995-2001 period in OECD countries.

The OECD further denotes that having ICTs linked to the sector, producing ICT goods and services, is characteristic of rapid technological progress and very strong demand. This is illustrated in Finland, Ireland and Korea, where 1 percent of aggregate labour productivity growth between 1995 and 2001 was due to the strong productivity performance of the ICT sector.

Furthermore, the contribution of ICT services (such as finance, business services and distribution) to aggregate productivity growth, rose slightly during the 1990s in Finland, Netherlands, Norway and Sweden, and even more substantially in Australia, Canada, Ireland, Mexico, the UK and the US. Network effects have also increased the overall efficiency of using labour and capital, or multi-factor productivity growth (MFP).

5.4.1 ICT challenges

According to the UNDP (2001:3-16), there are approximately six challenges that have affected the design, implementation and outcome of information, communication and technology development (ICTD) initiatives, the first of which is awareness. The UNDP argues that harnessing ICTs for human development requires awareness raising and constituency building across all

levels of society. As maintained by the UNDP, the link between ICTs and many development challenges is not always obvious, especially within countries with low educational standards and poor physical and information infrastructures. Following this is the challenge of politics, whereby the UNDP argues that information and ICT initiatives are political as the effectiveness and potential of ICTD initiatives can be inhibited or circumscribed by national and/or local power relations. Examples of this are the many cases of state controlled newspapers, radio and television stations. The UNDP states the third challenge as that of access, whereby barriers to universal access are not only about the availability of telecommunications infrastructure and computing equipment, but also barriers to individual access, such as educational and socio-cultural (for example, technophobia) hurdles. In the fourth challenge, i.e. relevancy and meaningful use, three interrelated issues are identified, namely:

- (i) Information has to be relevant and useful to end-users if ICT initiatives are to be appropriated.
- (ii) Even if the information accessed is useful, development outcomes would be negligible unless the end-users have the capacity to act. An example of this is how market prices delivered to the rural poor are useless if there are no roads to transport goods, or how medical advice to rural healthcare workers is meaningless if there is no money to purchase medicines. An even better example is cited by Panos (1995/1998 in UNDP 2001:12), where he describes the US based Earth Market Place initiative set-up in 1995. In spite of an elaborate web-site with the capacity to sell products, it was unable to raise sufficient capital to undertake marketing activities and to guarantee the quality and delivery of the imported produce.
- (iii) ICTs work best when they render more effective existing or clearly desired information flows. In other words, it is important to include the targeted user in the project planning stages in order to establish what types of information and services are most appropriate.

The fifth challenge is that of sustainability, where the UNDP denotes that

ICTs are compromised by unrealistic time frames, insufficient training and inappropriate technology. Finally, the challenge of coordination is cited sixth, where the UNDP asserts that lack of coordination can lead to the duplication of efforts and the incompatibility of technical solutions.

5.5 Telecommunications and information services for the poor

The World Bank (2002: ix) states that access to information and communication technologies is crucial for economic development and poverty reduction, affecting poverty reduction in three significant ways, i.e.: ICTs increase the efficiency and global competitiveness of the economy in growth and development; ICTs enable the better delivery of public services in areas such as health and education; and ICTs create new sources of income. The World Bank further argues that the digital divide, as measured by indicators such as telephone penetration and the number of internet hosts, exists not only between developed and developing countries, but also between urban and rural populations, and between poor rural nations. According to the World Bank, the isolation of rural communities poses a major challenge to service expansion.

In order to reach whole populations, the World Bank (2002:7) underscores the challenge of expanding telecommunications networks in developing countries as a major factor. The World Bank argues that there's a need to overcome the "market efficiency gap" and the "access gap". According to the World Bank, market efficiency refers "to the difference between the levels of service penetration that can be reached under current plans and conditions, and the level one would expect under optimal market conditions". For instance, service penetration under sound policies and a liberalized market, and service penetration in the absence of such conditions. The World Bank further describes the access gap as situations in which "certain areas or groups cannot be reached commercially, without some form of intervention".

Similarly, Odame (2005: 15) points out that on average, women have less income, education, time, and mobility, and face religious or cultural constraints that restrict their access to, and use of, technology. Odame further argues that some groups of women (i.e. rural women) are more disadvantaged than younger, more literate or wealthier urban women.

5.5.1 Mobiles and poverty reduction

The Panos Institute (2004:1-4) report states that mobile phones have greatly simplified the provision of services. The report declares that telecommunications contribute to development by facilitating social change and economic activity and improving quality of life. However, the Panos (2004:8) Institute cautions that although the initial installation is cheaper, mobile phones are expensive for users, as the cost of equipment and calls are generally higher than with land-line systems.

Correspondingly, there are several meritorious ICT interventions being used today that could serve as learning platforms for African countries. A good example is the Bangladesh mobile help line for women, better known as Pallitathya. According to The Association for Progressive Communications (APC, 2005), this enterprising group of rural women deploys women in the community as "mobile operator ladies". These women move from door to door to enable women, mostly housewives, to ask questions related to livelihood, agriculture, health and legal rights via the mobile phone. The "help-desk" operator comprises not only an information database, but resource persons from government, NGOs, health groups and human rights organizations. Notably, the activities of this group have been highly acclaimed by Gender and Information Communication Technology (GICT):- they won 1st prize, beating 39 other entries, in a recent 2005 ICT contest. Another idea of introducing telecommunication services into a rural community whilst offering them income generating viability is the example

of Grameen Telecom. Grameen Telecom (2005) is an NGO set up by Professor Muhammed Yunus, who had a vision of providing telecommunication services to 100 million rural inhabitants in the 68,000 villages in Bangladesh. The concept of this organization combines bank experience, in this case, Grameen Bank, with village based micro - enterprises, the latest digital wireless technology, Public Call Offices (PCOs) and privately operated phone centres. Grameen Bank provides a lease-financing program to a village phone operator, who subsequently becomes the owner of the phone. This village phone operator can then provide outgoing and incoming services to people in adjoining areas whilst collecting daily call charges. Grameen Bank provides organizational and infrastructural support to Grameen Telecom, and also collects phone bills and other dues. This idea has proven successful, as the project benefits all parties concerned whilst catering for the needs of the communities.

There are several initiatives in Kenya that are providing links between ICTs and sustainable livelihoods in activities such as agriculture, pastoralism, entrepreneurship and the provision of employment vacancy information. According to Wainaina (2005:25-28), the use of mobile phone text messaging to provide market prices to farmers, employment vacancy alerts to the unemployed, and local news to disadvantaged communities and slum dwellers, is an invaluable approach to poverty reduction. For example, SokoniSMS empowers farmers by providing SMS market prices, a service launched by the Kenya Agricultural Commodity Exchange (KACE) in 1997.

Similar initiatives, which tackle challenges of sustainable development and view the information society as a catalyst for viable solutions, include Simu ya Jamii (family phones) Community Phone services. This initiative involves small scale businesses running mobile telephone kiosks. With the help of Safaricom limited, and other local micro-finance organizations, credit facilities have been arranged for small-scale entrepreneurs. This has resulted in improved access to telecommunications, employment and other

business opportunities. Furthermore, there is the CommunityNews Service, which is situated in the heart of slum dwellers. This service sends regular messages that deal with health, sanitation, business advice and scholarship opportunities, to over 3,000 residents in Kenya's largest informal settlement (Up to 70% of Nairobi's population lives in the informal settlements, with Kibera accounting for the majority) (Wainaina, 2005:29).

5.5.2 *The role and use of rural radio in Africa*

With regard to the rural radio, Iiboudo (2003:206-208) argues that the radio should aim to belong to a community and respond to their needs. Ultimately, the radio has the capacity to enable the broad participation of men and women in a local community. The author points out that the radio is the cheapest of all mass communication tools and that rural people can obtain it easily. Iiboudo further asserts that the radio has flexibility when playing the following roles: (i) a means for disseminating key information, in a great many languages, and in geographically vast or restricted areas; (ii) a platform for dialogue and debate between developmental stakeholders; (iii) a platform for rural and urban communities to express themselves; (iv) a tool for awareness-building and social mobilization; (v) and an instrument for research, providing genuine information about rural communities (upwards) to decision makers.

The World Bank (2002:2-3) contends that although the radio is still commonly used by most rural women, it is important to remember that there is an urgent need to increase the connectivity of the rural poor to the computer and the internet. This can be achieved through policies that increase connectivity and take into account the constraints facing poor people. According to the World Bank, competition between telecommunication companies slashes service costs and improves access to the technology in question. The World Bank further argues that since large

telecom operators tend to limit their operations to high income urban areas, privatization should be opened up to enable small entrepreneurs to supply telecomm services to rural areas. Through "regulation and subsidies, private operators can be invited to bid to provide services in areas that are not commercially viable, in return for a subsidy financed from a Universal access fund".

Another point to consider is the fact that interventions must be designed to reach their target beneficiaries, i.e. the poor rural woman (World Bank, 2002:4-5). According to the World Bank, "ICT projects that succeed in reducing poverty are generally run by organizations with a proven track record". To be relevant to poor people, applications must take into account the local languages, be visually oriented, and use voice interfaces.

5.6 How to incorporate gender in projects

In a report on whether or not ICTs are gender neutral, Hafkin (2002:16) reviews case studies in six countries, namely: China, Ethiopia, India, Kenya, Panama, and Peru, and suggests that it is imperative to involve the beneficiaries in project design. In other words, gender considerations are crucial from the beginning of project design or the planning stages of the project under consideration. Requirements include: (i) sex - disaggregated data on projects, especially those involving training; (ii) the need to correctly assess skill levels before training for adjustment, as more women [than men] may have low skill levels in information technology; (iii) taking into account gender specific cultural constraints, such as women's family responsibilities and difficulties in attending evening training sessions; and (iii) a post training follow-up to ensure access, combat cultural constraints and promote skills retention.

The fact that information is power, and that women constitute more than half of the population in most African countries, necessitates the need to

prioritize actions needed to help women have access to information (Solange and Momo, 2005:6). According to the authors, these actions require the need to always conduct an area study before any project that involves ICTs is implemented. This enables the collection of socio-economic data and the identification of information requirements (education, family planning, legal matters, etc). Solange and Momo (2005:6) further state that it is important to always define objectives, establish a given project's methodology, and identify the project's beneficiaries . This ensures that the target audience, in this case the poor rural woman, is reached. Furthermore, it is essential to consider the legal implications of the setup. This establishes that all the necessary protocol has been observed. The authors further add that the information infrastructure in relation to the technology in question must be taken into consideration, i.e. cultural traditions (oral), or adapted tools (radio). In other words, it is important to ascertain how information flows in the community and what communication tools are in use. In this way, potential risks and threats associated with the use of ICTs would be avoided or minimized (Harris, 2004: 37). Finally, any existing infrastructure should be used as an entry point into a community (e.g. a school, a church, etc).

Needless to say, the constraints facing developing countries are numerous, and could be said to hamper ICT development. They include lack of purchasing power, inadequate training and human capacity, illiteracy, poor physical and information orientated infrastructures, and inadequate access to capital and private investments (EC, 2000/2001:7). All these factors play an important role in the socio-economic fabric of a society. The World Bank (2002:1) points to three crucial elements required in efforts to combat poverty: opportunity, empowerment and security. According to their report, experiences in rural India indicate that ICTs can enhance poor people's opportunities by improving their access to markets and health care, empower them by expanding their use of government services, and increase security by widening access to micro-finance.

5.7 Overcoming the gender digital divide

Huyer and Sikoska (2002:19) underpin the importance of women collectively organizing themselves in order to: (i) determine the type of information they need; (ii) determine the way that information is presented; and (iii) develop the concrete means required for information to be accessed and used. Additionally, the authors iterate that it is necessary for all stakeholders involved to address the following barriers to ICT access: (i) low levels of literacy and education, including training in languages predominantly used in *ICT platforms and on the internet*; (ii) less time, due to women's domestic, productive and community management responsibilities, leading to a much longer workday than men's; (iii) less access to financial resources that cover the cost of equipment and access; (iv) and geographical location, as women in developing countries tend to live in rural areas more than men. According to the authors, infrastructure in such places is less dependable, and travel to ICT centres is affected by cost, time and cultural constraints.

Finally, training is necessary, as learning is rendered more effective through both practical application, and innovative and interactive training (World Bank, 2002:5).

5.8 Gender equality and empowering women (MDGS)

In a recent report prepared by the UN Millennium Project Task force on Education and Gender equality, Grown et al. (2005:33-34) define the concept of empowerment as being related to gender equality, yet distinct from it. According to the authors, "empowerment implies that women must not only have equal capabilities (such as education and health) and equal access to resources and opportunities (such as land and employment), but they must also have the agency to use those rights, capabilities, resources and opportunities to make strategic choices and decisions (such as is

provided through leadership opportunities and participation in political institutions)". The report further lists seven strategic priorities previously outlined in international agreements, including the Beijing Declaration and Platform for Action, and the Cairo Programme of Action. These priorities include: (i) strengthening opportunities for post primary education for girls; (ii) guaranteeing universal access to a broad range of sexual and reproductive health information services, (iii) investing in infrastructure to reduce women's time burdens; (iv) guaranteeing girls and women's property and inheritance rights; (v) eliminating gender inequality in employment; (vi) increasing women's share of seats in national parliaments and local governmental bodies; (vii) and combating violence against girls and women.

Access to information by women can be seen as a central empowerment issue. Control over the kinds of information they need and produce is a fundamental aspect of empowerment. Despite this, there has been little research done on women's information needs and access to appropriate information in developing countries. Links between development and the use of ICTs are yet to be clearly established and rigorously supported by empirical results, particularly within African contexts. In developed countries, the evolution of ICTs has been closely linked with the power and economic boom of these countries, and there has been an additional strong positive correlation with development (Thioune, 2003).

5.8.1 ICT Impact and use in women's empowerment and advancement

Marcelle (2002:3) calls for the empowerment of women through the enhancement of skills, knowledge, and access to ICTs. The author underpins the fact that there are two critical prerequisites for bringing ICT economic benefits to as large a group of women as possible, namely: making

improvements in access; and promoting initiatives that include rural women in the informal sector.

Marcelle (2002:3) further notes that the main challenge facing the use of ICT for advanced applications such as e-commerce is the fact that the appropriate infrastructure and supporting policies are unevenly distributed. For example, 85% of the world's commerce websites are US-based, with Western Europe and Asia making up the rest. Additionally, not many people possess visa cards etc. that would enable them to buy on the internet.

Wheeler (2005:1-3) ranked expanding women's access to information technology as the third most pressing concern women face, preceded only by domestic violence and poverty. According to the author, women have observed that the internet and other forms of IT provide access to professional networks, and allow them to keep in touch with friends and family, especially those residing abroad. Additionally, IT training empowers women with marketing skills, familiarizes them with computers and also gives them an edge in competitive jobs.

Similarly, Thas (2005:1) argues that women can be enriched by having *"the right information at the right time and at the right place."* The author adds that one can be impoverished without access to, or control and ownership of, this valuable information resource. Thas, cautions that the freedom of information today has impacted heavily on the ease and the extent of knowledge sharing. According to the author, control over *"who harnesses what information"*, and to *"what extent that knowledge is further shared and with whom"*, has become politically volatile since the September the 11th (2001) attacks.

5.9 Participatory Design

Participatory design is referred to as the Scandinavian school of design, and originated in the Scandinavian trade unions of the 60s and 70s. The question this poses is how can participatory design be used to alleviate poverty amongst the rural poor? In response to this question, Bessette (2004) stipulates that promoting community self-organization is the only practical approach when faced with a state that does not have the necessary resources to assume all of its responsibilities, such as addressing basic human needs and socio-economic development. Bessette coins his argument around the concept of participatory development communication (PDC).

According to the author, the community should be encouraged to participate in development initiatives through a strategic utilization of various communication strategies, which include:

- discussing natural resource management practices and problems;
- identifying, analyzing and prioritizing problems and needs;
- identifying and implementing concrete initiatives to respond to those problems;
- identifying and acquiring the knowledge required to implement such initiatives; and
- monitoring and evaluating their efforts and creating a plan for future action.

In this communication process, all stakeholders are brought together, i.e. community members, active community groups, local and regional authorities, NGOs, government technical services or other institutions working at the community level, and policy makers who are or should be involved with a given development initiative. Bessette (2004) emphasizes that this kind of communication means moving away from persuading people to change their behavior or attitudes, to a focus on facilitating exchanges

between different stakeholders which address a common problem in a two-way *communication process*. The author denotes that the communication process should also be able to facilitate the learning process, especially where the goal of the research or development initiative involves acquiring knowledge and developing skills or know-how.

Bessette also points out other important factors that should be considered in a two way communication process. These include:

(i) The use of adult education as a *non-directive teaching approach* - the ability to facilitate participation in a small group, identify attitudes, collect views and perceptions and facilitate moderate discussions.

(ii) Making information accessible in a form consistent with the characteristics of the participants in the communication process. Information on desertification prevention, for example, will not necessarily have the same meaning for nurses, peasants, soldiers, traders and youngsters.

(iii) Encouraging and organizing women's participation in serving as communication facilitators, as only women are able to communicate genuinely with other women about their needs and help them channel their efforts to bring about change.

(iv) Identifying communication tools already in use within the local community. Communication tools may be in the form of mass media (newspapers, radio, and television), traditional media (storytelling, theatres, and songs), "group" media (video, photographs, posters) and community media (short-range rural radio broadcasting). Different forms of interpersonal communication include:

- Discussion and debate.
- Screening sessions of a film or video.
- Focus group discussions with a small number of people (7-10).
- Participatory rural appraisal techniques (PRA). This technique gives a lot of information in a limited time span about the characterization of natural

resources in a given area and basic social, economic and political information.

- *Role-playing* - helps to facilitate participation in a small group, identify attitudes and collect views and perceptions.
- *Visits, tours, workshops and exhibitions* - assist in collecting views and also in raising awareness.

At the community/grassroots level, earlier studies conducted by Ngimwa, Ocholla and Ojiambo, (1997); Mooko (2002: 110) and Veli and Ocholla (2004), underscore the importance of participatory mechanisms for community engagement when implementing ICT related projects. These include alternative media resources, and sources of information such as, women's groups, folk media, religious gatherings, exhibitions, extension services and discussion forums.

5.10 Summary

The chapter confirms that access to and use of ICTs is directly linked to social and economic development and on average, women have less income, education, time, and mobility, and face religious or cultural constraints that restrict their access to, and use of, technology.

It is therefore imperative to ensure that women in developing countries understand the significance of technologies and how to use them. This requires awareness raising and constituency building across all levels of society. As maintained by the UNDP, the link between ICTs and many development challenges is not always obvious, especially within countries with low educational standards and poor physical and information infrastructures.

Similarly, women in developing countries should be encouraged to take full advantage of the opportunities offered by information technology by acquiring more education at all levels from literacy, through scientific and technological education.

The chapter also established that women's needs for information are structured according to gender specific roles and responsibilities, which in turn influence their use of, and response to, ICTs. It was further noted that the main challenge facing the use of ICT for advanced applications such as e-commerce is the fact that the appropriate infrastructure and supporting policies are unevenly distributed.

The fact that the majority of the rural poor in developing countries are women, who generally experience more difficulties in accessing ICTs than men, raises concerns about the ability of ICTs to significantly impact on country development if women's ICT needs are not specifically addressed. The review confirms that ICTs play a fundamental role in the lives of women, especially in information access. Special efforts, however, need to be made in order to facilitate this process. These may include research on information needs, the use of information and specific problems encountered prior to project implementation. There is also a need to enact policies that take into consideration of the plights of the rural poor in relation to ICTs. Last but not the least, it is necessary to involve target beneficiaries or end-users in the project planning processes.

The next chapter (six) deals with the research methodology of the study.

CHAPTER SIX

RESEARCH METHODOLOGY

6.1 Introduction

The previous chapter reviewed literature related to the study in the following areas: Women's information and ICT needs; Gender, ICTs and sustainable development; ICT impacts and challenges; Telecommunication and Information services for the poor; Mobiles and poverty reduction; The role and use of rural radio in Africa; How-to incorporate gender in projects; Overcoming the gender digital divide; Gender equality and empowering women in the Millennium Development Goals; ICT impact and use in women's empowerment and advancement and Participatory design.

This chapter discusses the overall research methodology endorsed in the study. Research methods, design and techniques are described not only in keeping with the objectives of the study, but also within the framework of ICTs in rural development and amongst women. Subsequently, the chapter is divided into three subsections. Section I covers: research paradigms; research design and pilot survey. Section II covers research methods used during the field survey in both South Africa and in Kenya. This includes: study areas and population, sample size, sampling, data collection techniques, data analysis and instrument. Section III covers research methods for case studies. This includes: study areas and population, sample size, sampling, data collection techniques, data analysis and instrument.

Research methodology is defined by Nachmias and Nachmias (1996:13) as a scientific system of explicit rules and procedures upon which research is based, and against which claims of knowledge are evaluated. According to the authors, the system is neither unchangeable nor infallible. Rather, the

rules and procedures are constantly under review as scientists seek new means of observation, analysis, logical inferences and generalisation. Mugenda and Mugenda (1999:149) opine that research methodology gives details regarding the procedures to be used in conducting a study, and therefore describes pertinent issues such as research design, population, sample and sampling techniques, and a description of the instruments or tools [to be] used to collect data.

6.2 Study paradigms

Hagner and Helm (1994) contend that research approaches can be generally dichotomised into two, namely: quantitative and qualitative.

Quantitative research involves the measurement of variables and the statistical analysis of relationships between these variables. Hagner and Helm (1994) illustrate that data is collected under standardised conditions, for example, in social and behavioural research, questionnaires or an observation protocol are conventional instruments used in data collection. The authors are of the opinion that in quantitative approaches, the logic of deduction is used to test hypotheses against data collected. In other words, from the data collected, conclusions may be derived. A wide variety of experimental, quasi-experimental and descriptive research designs are available within the quantitative tradition. Examples of quantitative studies include experiments, surveys, content analysis and bibliometric (infometric) studies. Research instruments for capturing quantitative studies are normally structured or close-ended questions. Survey research can accommodate qualitative and quantitative research paradigms, depending on how the questionnaire or the interview schedule is structured. Likewise, Hopkins (2000) asserts that quantitative research is about quantifying relationships between variables without any attempts to change behaviour or conditions. The author notes that these studies are also called observational, as the subjects are not interfered with.

Some of the variables that were tested in this study include:

- ICT resources accessed and used (dependent) against women in rural areas (independent)
- ICT hindrances (independent) against ICTs accessed and used (dependent)
- Which ICTs (independent) serve rural women's information needs (dependent)
- Purposes of information used (independent) and sources of information (dependent)
- Purposes of information (independent) and ICTs used (dependent)

The study also manipulated moderator or control variables such as the age of the women and their education levels in order to observe the effect on dependent variables. Therefore, when measuring ICT resources accessed by rural women as a function of women in rural areas, the study used the women's educational background as a control variable. This approach was also suitable given the large female population in Kenya and South Africa. As women were chosen randomly from a predefined population, the data collected and statistically analysed was used to draw, or infer appropriate conclusions that could be applied to the rest of the women in Kenya and South Africa.

The study also adopted a qualitative approach. Hagner and Helm (1994), note that qualitative research includes a wide array of methodologies. These methodologies are sometimes also referred to as "interpretive," "ethnographic," or "phenomenological." Of interest to this study were five characteristics commonly found in the qualitative approach, namely:

- (i) Initial research questions, which are formulated to guide an investigation. Using a data collection protocol, details such as the questions

to be asked in an interview, the length and schedule of interviews or observations, and the selection of people to interview or settings to observe were designed.

(ii) The development of explanatory categories, which occurs only after an in-depth exposure to phenomena and not before. For instance, "which ICT resources do you use and how do you implement them amongst rural women?"

(iii) The narrative character of data, as data is collected primarily through in-depth interviews. Documents such as case records and organizational memoranda served as additional raw data for this study. The study therefore collected case records and organizational memoranda practically depicting the use of given ICTs by women in rural areas using specific case studies, such as the *AfriAfya* and *ALIN-EA* case study in Kenya, and the Women's net and National Community Radio Forum (NCRF) in South Africa.

(iv) The inductive process of data analysis. This process of interpreting qualitative data and generating findings was accomplished in the study using the said logic of induction rather than deduction, as patterns were recognized in the data, and a theory or explanatory model to account for the phenomena was constructed. For instance, findings from both case studies in Kenya revealed that the use of a local management committee/board and the use of Community Development Workers (CDW) were crucial processes in ICT project implementation amongst rural women. General statements therefore came at the end of the study, as findings, rather than at the beginning, as hypotheses.

(v) The focus on meanings, as the study was interested in the interpretations that people gave to their surroundings. The study therefore looked in depth at a small number of settings or people. As a result, the study involved smaller sample sizes than would be the case in quantitative research. Examples of such samples are the case studies used in the study, such as the case study conducted in Kenya on a small group of women

under the umbrella of *AfriAfya*, and *ALIN(EA)*. Additionally, Fortunecity (1999) discusses an important factor in qualitative research, which is that researchers are often involved in the situation of the research. This often brings to the study a subjective element and involves the generation of a theory. This approach was applied to the study in order to gain an in depth understanding of the socio-economic gains involving women and ICTs in rural areas. Additionally, through the content analysis of data, the study induced supportive or otherwise new theories in the use and application of ICTs amongst rural African women. The qualitative approach catered for subjectivity through close interaction with selected informants. In this way, the study captured the feelings and attitudes of various sub categories of women. Additionally, given the fact that ICTs are relatively new phenomena in many African countries, spanning only about four decades, the qualitative approach was deemed useful as it identified cases that could serve as a springboard to the development and implementation of ICTs amongst rural African women.

6.3 Research Design

Bless and Smith (2000) contend that research design relates directly to the testing of hypotheses, and is a specification of the most adequate operations to be performed in order to test a specific hypothesis under given conditions. According to the authors, a research design asks an important question, namely what steps should be taken in order to demonstrate that a particular hypothesis is true and that all other possible hypotheses must be rejected. It also pays particular attention to three important areas, namely: the focus of the study, which takes into account the current status of the subjects in question; their orientations i.e. their beliefs and attitudes; and their actions. For example, the focus of this study is rural women and ICTs. The study was interested in understanding the infrastructure and resource base of the environments in which rural women of South Africa and Kenya reside, and

how this has affected their use of ICTs. The study also took into consideration the unit of analysis, or the sample with which to work with, which could potentially involve individuals, groups of people, organisations and social artefacts. In the case of this study, individual women and organisations working with women formed the unit of analysis. The time dimension of any study is equally important as observations may take place at a particular time, in which case use is made of a cross sectional design, or may be deliberately spread over a long period of time, which would warrant a longitudinal design. This study adopted a cross sectional design as data was collected at a particular point in time.

Selltiz (1976: 90) postulates that research design provides a plan that specifies how research is going to be executed. Alternatively, Kothari (1992:41) argues that research design should be able to yield maximum information and provide an opportunity for considering many different aspects of a problem. According to Kothari, research design must consider the following factors: the means of obtaining information; the skills of the researcher and his/her assistants; the objectives or the problem under scrutiny; the availability of time; and the money for research work. The research design of this study took into account aspects such as the purpose of the research, the level of accuracy required in the results, and logistics, such as the cost, time and labour involved.

6.4 Pilot-Survey

Teijlingen and Hundley (2001:1) refer to pilot studies as mini versions of a full-scale study, otherwise referred to as 'feasibility' studies, and include the specific pre-testing of a particular research instrument, such as a questionnaire or interview schedule. According to the authors, these studies are a crucial element in the formulation of a good design as they increase

the likelihood of success. The authors further contend that conducting a pilot study is crucial, as it could give advance warnings about where the main research project could fail, where research protocols may not be followed, or where proposed methods or instruments are inappropriate or too complicated. According to the authors, reasons for conducting a pilot study include: "Developing and testing the adequacy of research instruments; assessing the feasibility of a (full-scale) study/survey; designing a research protocol; assessing whether the research protocol is realistic and workable; establishing whether the sampling frame and technique are effective; assessing the likely success of proposed recruitment approaches; identifying logistical problems which might occur using proposed methods; estimating variability in outcomes to help determine the sample size; collecting preliminary data; determining what resources (finance, staff) are needed for a planned study; assessing the proposed data analysis techniques to uncover potential problems; training a researcher in as many elements of the research process as possible" (Teijlingen and Hundley,2001:2).

Reconnaissance or pre-survey was an essential research procedure in this study as it applied scientific approaches to testing both the reliability, and the significance of the set research procedures. Most importantly, the pilot survey aimed to bring to light an understanding of the subject matter of the current research, the population it was to cover, its spatial variability, and the possible reaction to questions from respondents. This study's pilot study took place during the month of October 2004. The table that follows provides a summary of the activities that preceded the study:

Table 4 Activities prior to and after Pilot study

Item	Details	Dates
Discussions	To revise/refine research instrument. Exercise involved three researchers and two research assistants	October 1 st 2004
Training	Training of two research assistants	October 4 th 2004
Training	Training of two research assistants	October 15 th 2004
Data collection protocol	Initial visits were made to the Protective Services Department (PSD) of the University of Zululand and the local area chief for notification of intended survey /exercise. Both parties were very supportive. The PSD offered a four-wheel drive and two officers to accompany the research team.	October 15 and 16 th 2004
Pre-testing of research instrument	Survey involved one researcher and three research assistants. Two of these assistants were from the Protective Services Department (PSD) of the University of Zululand. Aside from the fact that they were social workers with a good background knowledge of the study area, they could speak the local dialect, and also offer protective services. The pilot survey was conducted in the rural settlements of Gugushe, and Pongola in Ward 23.	October 16 th 2004
Data compilation	Pre-coding of instrument and Data analysis	October 17 th - 25 th
Report writing	Report writing	October 26 th – Nov 5 th

6.4.1 Findings and lessons learnt from the Pilot study.

■ The study revealed a particular problem with questions requiring a likert-scale type of response from respondents. Consequently, a "no response" column was highly recurrent throughout the findings.

■ There was also a high "no response" rate with regard to certain crucial questions, such as the need for and use of information in various sectors, e.g. education, agriculture etc. In other words, the *needs* and *purposes* of information depicted no relationship between the variables. For instance, no relationship was noticed between tables depicting "needs" for health information and the "purposes" this information was used for by the respondent. This discrepancy was minimised through the use of a more comprehensive research instrument and more experienced research assistants when interviewing respondents.

■ It was necessary to redesign the questionnaire in order to make it less cumbersome for both the respondent and the research assistants.

■ It was also found necessary to recruit more experienced research assistants who could get the respondents to answer more/all questions.

■ Due to the language barrier, particularly amongst the black ethnic group of the study in the rural areas of Pongola and Gugushe , particular attention had to be paid to the research assistant recruited to provide translation services.

6.5 Research Methods (Quantitative)

6.5.1 Survey Method

According to Bill (1995) the word 'survey' is most often used to describe a method of gathering information from a sample of individuals. This way the results can be reliably projected from the sample to a larger population. The author notes that surveys serve a wide variety of purposes, and can be conducted over the telephone, by mail, or in person. Accordingly, mail surveys can be relatively low in cost and are most effective when directed at particular groups, such as subscribers to a specialised magazine or members of a professional association. Similarly, telephone interviews are an efficient method for the collection of certain types of data, and are suitable in situations where timeliness is a factor and the length of the survey is limited. Likewise, personal interviews are conducted when complex information is required and are comparatively more expensive than the former two surveys.

Due to the purpose and objectives of this study, the survey method was considered a suitable method for the collection of quantifiable data. Using survey research, an attempt was made to collect data from a cross section of female members of the South African and Kenyan population in order to determine their current status in relation to information and the use of ICTs.

6.6 Study areas and Population

6.6.1 Study area

The study was carried out in two countries, namely Kenya and South Africa. In South Africa, the study narrowed its focus down to the uMlalazi (KZ 283) municipality. This municipality is located in Uthungulu District in the province

of Kwa-zulu Natal (KZN), South Africa. In Kenya, the study focused on the Transzoia District, which is situated in the Rift Valley province of Kenya. The Rift Valley province is one of eight provinces in Kenya and has a population density of 7 million people (Opondo and Sekou-Ochieng, 2000).

6.6.1.1 *Kwazulu Natal Province*

KZN has the largest population per province in South Africa - approximately 9.3 million (Statssa: 2001). While 43% live in urban areas, 57% reside in the rural areas (Kwa-Zulu - Natal: 2001). The GCIS (2005/6) states that KwaZulu-Natal (often referred to as "KZN") is one of nine provinces found in South Africa. According to the GCIS, KZN is aptly called the garden province and is home to the Zulu nation. It extends from the eastern borders with Swaziland and Mozambique to the Eastern Cape border in the South. The Kingdom of Lesótho, the Free State and Mpumalanga provinces also bind KZN. Pietermaritzburg is KwaZulu-Natal's capital and Richards Bay is an important coal-export harbour. The GCIS further reports that the key strength of KZN's economy is its trade and transport infrastructure.

6.6.1.2 *Uthungulu District*

According to the uThungulu District Municipality (2004), the district consists of six local municipalities, namely:

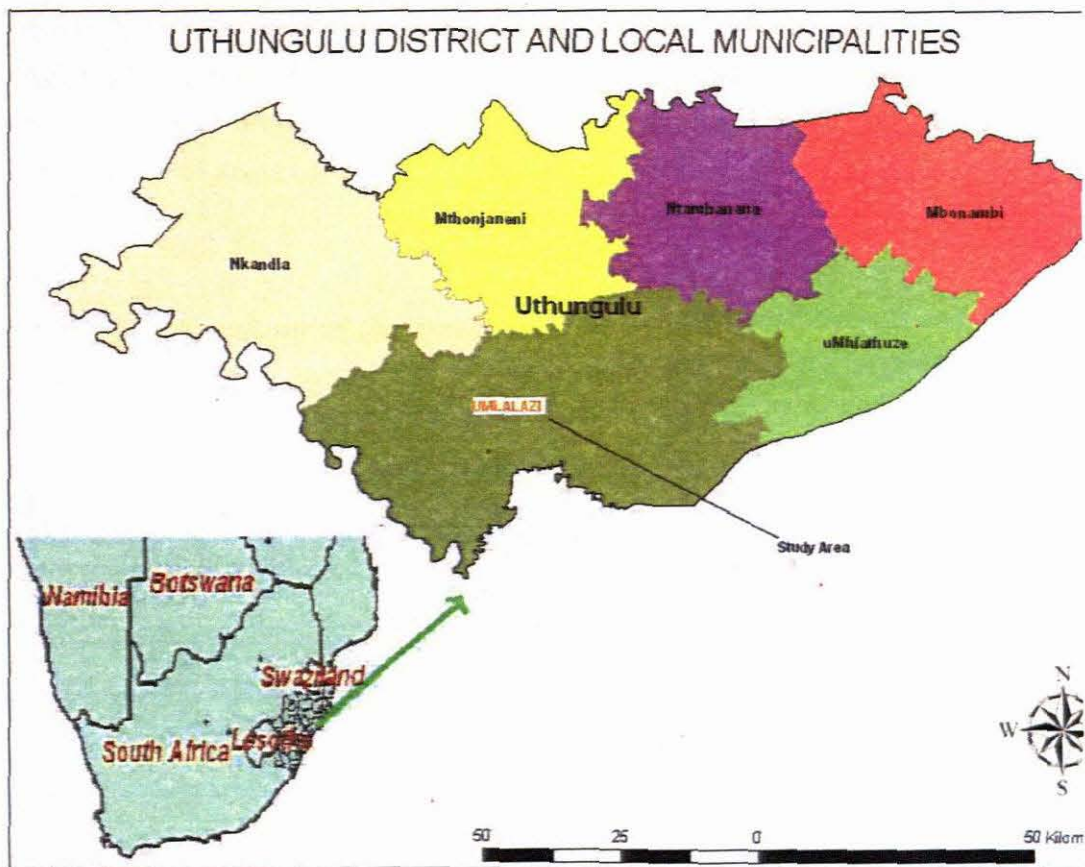
- Mbonambi (KZ 281)
- uMlathuze (KZ 282)
- Ntambanana (KZ 283)
- uMlalazi (KZ 284)
- Mthonjaneni (KZ 285)
- Nkandla (KZ 286)

The report further asserts that *Uthungulu* has the third highest population in the province, after the Durban Metropolitan Council and the uMgungundlovu

District Municipality. Significant economic centres in the district are Empangeni and Richards Bay, the latter being the largest deepwater port in South Africa. According to the report, these two economic centres have become a *prime attraction for large-scale industrialization in the district* and have resulted in Richards Bay becoming the fastest growing urban centre in South Africa. The report further reports that the manufacturing industry contributes significantly to the economy of the uThungulu district, and is closely followed by the transport sector and agriculture. The most important sectors are *sugarcane and timber*, and a good part of the tourism industry. There is a growing demand for Zulu handcrafts and cultural artifacts both locally and internationally.

Similarly, UThungulu District Municipality (2003), reports that in 1997, the Uthungulu region had an estimated urban population of **188,594** and a rural population of **1,068,345**. The report indicates that the largest proportion of the population lives in the former KwaZulu Natal districts, which are largely rural and characterized by poverty and low levels of service. The largest concentration of the population occurs in the southern magisterial districts, including Mtubatuba, Hlabisa, Richards Bay and Empangeni/Ngwelezana. The redrawing of municipal boundaries in 2000 has since split the Uthungulu region into two districts, namely Uthungulu and Umkhanyakude.

Map 1. Map of Uthungulu District and local Municipalities in the KZN Province of South Africa.



6.6.1.3 Umlalazi municipality

Uthungulu District Municipality (2003) records indicate that Umlalazi is a sub-region of the uThungulu region located on the north-eastern coast of KwaZulu-Natal. According to the report, the Umlalazi sub-region forms part of the so-called *shadow corridor of KwaZulu-Natal, which runs parallel to the coastal corridor in the province. The shadow corridor reportedly consists of disadvantaged and underdeveloped areas adjacent to the highly developed coastal corridor of KwaZulu-Natal.*

Table 5 Composition of the Umlalazi population

Demographic profile for Umlalazi. Adopted from the UIDP, 2002

WARD NOS	Population Group					TOTAL
	AFRICAN	COLOURED	INDIAN	WHITE	OTHER	
1	11459	-	-	-	23	11482
2	10172	-	-	-	61	10233
3	7847	-	-	-	79	7926
4	9181	-	-	-	83	9264
5	9703	-	-	-	98	9801
6	9818	-	-	-	53	10423
7	9412	9	-	-	38	9459
8	10672	-	-	11	108	10791
9	6669	62	-	-	166	6897
10	11195	11	-	46	137	11389
11	6025	6	13	279	19	6342
12	3419	988	580	2393	52	7432
13	4743	24	5	5	48	4825
14	4993	25	-	5	20	5043
15	6057	13	170	229	72	6541
16	1650	104	641	179	15	7449
17	13069	-	-	-	119	13188
18	5346	5	38	49	12	5450
19	10037	-	-	-	143	10180
20	12823	13	-	-	64	12900
21	6640	7	-	-	27	6674
22	8099	-	-	-	8	8107
23	8627	-	-	-	122	8749
24	6028	-	-	6	18	6052
25	12950	44	15	1565	192	14766
26	9631	19	-	-	10	9660
TOTAL	221125	1361	1712	5038	1787	231023
% OF TOTAL	95,7	0,6	0,7	2,2	0,8	100

Table 6 Umlalazi population gender split.*Adopted from the UIDP, 2002*

WARD NO	MALE	%	FEMALE	%	TOTAL POPULATION
1	4995	43.5	6487	56.5	11482
2	4349	42.5	5884	57.5	10233
3	3464	43.7	4462	56.3	7926
4	4002	43.2	5262	56.8	9264
5	4322	44.1	5479	55.9	9801
6	4795	46.0	5628	54.0	10423
7	4200	44.4	5259	55.6	9459
8	4878	45.2	5913	54.8	10791
9	3028	43.9	3869	56.1	6897
10	5102	44.8	6287	55.2	11389
11	2924	46.1	3418	53.9	6342
12	3768	50.7	3664	49.3	7432
13	2137	44.3	2688	55.7	4825
14	2234	44.3	2808	55.7	5042
15	3277	50.1	3264	49.9	6541
16	3389	45.5	4060	54.5	7449
17	5961	45.2	7227	54.8	13188
18	2583	47.4	2867	52.6	5450
19	4662	45.8	5518	54.2	10180
20	5728	44.4	7172	55.6	12900
21	3003	45.0	3671	55.0	6674
22	3713	45.8	4394	54.2	8107
23	3891	45.5	4858	54.5	8749
24	2633	43.5	3419	56.5	6052
25	7028	47.6	7738	52.4	14766
26	4395	45.5	5265	54.5	9660
TOTAL	107459	46.5	123564	53.5	231023

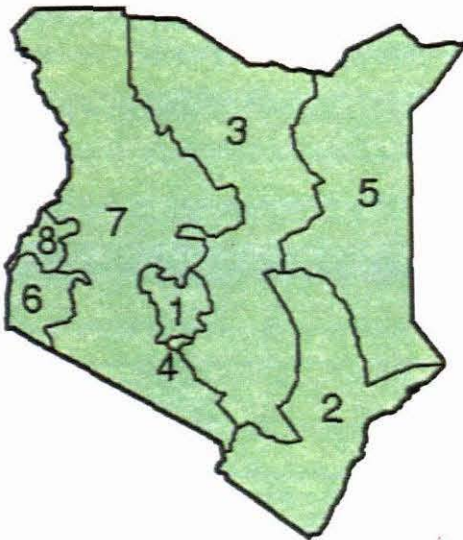
According to the Uthungulu District Municipality report (2003), most of the population within the Umlalazi sub-region is migrant, resulting in larger female numbers in the region.

Further reports by the Uthungulu District Municipality (2003) indicate that the Umlalazi sub-region/municipality is mostly rural in nature, with only a few urban settlements. The report asserts that former Natal districts are poorly developed with traditional, communal and tenure/ownership systems.

6.6.2. *Rift Valley Province (Kenya)*

The Rift Valley province is one of the largest and most economically vibrant provinces in Kenya. It is dominated by the Great Rift Valley which passes through it and gives the province its name. Aside from being a tourist attraction, the highlands provide adequate rainfall for farming and agriculture, which is the economic mainstay of the people (Wikipedia – the free Encyclopedia, 2005; Kenya.com, nd).

Map 2 Map of Kenya indicating provincial boundaries.



Key:

1. Central
2. Coast Province
3. Eastern Province
4. Nairobi
5. North Eastern Province
6. Nyanza Province
7. *Rift Valley Province (Study area)*
8. Western Province

6.6.2.1 *The districts of Rift Valley province include:*

- Baringo
- Bomet
- Elgeyo Marakwet
- Kajiado
- Kericho
- Laikipia
- Nakuru
- Nandi
- Narok
- Samburu
- Transnzoia
- Turkana
- Uasin Gishu
- West Pokot

6.6.2.2 *Trans – Nzoia District*

Trans – Nzoia District is an administrative district of the Rift Valley Province, Kenya, and is located between the Nzoia River and Mount Elgon. Its centre is the town of Kitale. Although the area has mainly been inhabited by the Kalenjin people, independence saw many of the farms vacated by white settlers and bought by individuals from other ethnic groups in Kenya (Wikipedia - the free Encyclopaedia 2005; Kenya.com, nd).

Table 7 Demographic profile for Kaplamai sub-divisions in Trans - Nzoia District (Figures adopted from the 1999 Population and housing census of Kenya)

Trans Nzoia District	Male 286836	Female 288826	Total 575662	Den-sity 231
Kaplamai sub-divisions:				
Kimoson	9457	10051	19508	330
Motosiet	7869	8231	16100	288
Sitatunga	8930	8990	17920	286
Sinyerere	10528	10735	21263	299
Makutano	7692	7375	15067	184
Biribiriet	1850	1809	3659	173
Kapsara	3367	3255	6622	178
Kapolet	2475	2311	4786	205

6.7 Population

Fraenkel and Wallen (2000:104) assert that before one selects a sample, one has to define the population of interest. This interest, they argue, could be in the form of what group the researcher is interested in or to whom the results apply. A population is any finite or infinite collection of individual objects with which a researcher would like to generalize the results of a study. It therefore consists of a number of units of enquiry. Bless and Smith (2000) further illustrate that a sampling theory is a technical accounting device used to rationalize the collection of information, and to choose in an appropriate way a restricted set of objects, persons, and events from which actual information will be drawn. Nachmias and Nachmias (1996) define population simply as consisting of all households in a given community or all registered voters, for instance, in a particular district. A population may be composed of all the residents in a specific neighborhood, houses etc. This study focused on all women aged between 16-60 studying, working and living in the provinces of Rift Valley (Kenya) and Kwa-Zulu Natal (South Africa). Careful attention was, however, given to women who reside in the rural areas of both these provinces, and to their ethnic affiliations. The word "rural" is intended to mean places with rural characteristics, such as: low levels of service (e.g. transport, water and medical services), non-urban settlements (such as riparian villages) and high incidences of poverty (Ikoja-Odongo 2002b:192).

In order to increase confidence in the sample represented, a census list detailing the population figures of women in each category was acquired from the respective government offices in both countries.

6.8 Sampling

According to Baker (1999), sampling refers to specific ways of selecting subjects, or simply to "who will be studied". The author states that major

goals of sampling include ascertaining a 'representiveness' of what is being studied, thereby reducing bias, and applying inferences from findings based on a sample to a larger population. The study used non-probability (purposeful) and probability (simple random) sampling techniques to create a *sampling frame*. In order to achieve the desired representation from various sub-groups in the population, purposive sampling was first applied. This sampling technique allowed the researcher to initially identify suitable regions in Kenya and in South Africa which possessed high population densities, and also to discern the required racial mix (Mugenda and Mugenda, 1999:50). In order to further increase the chances of obtaining a representative sample, random sampling was applied. In this technique, suitable wards/divisions had an equal chance of being selected. This sampling technique also helped to prevent bias in the selection process. By using the snowball technique, women directly and indirectly connected to each other were interviewed (Neuman, 2000:198).

The above sampling techniques are described in the following stages:

6.8.1 *Purposive sampling*

In stage 1, the study purposefully selected provinces in South Africa and Kenya with similar characteristics. As the units of study were the rural women of both South Africa and Kenya, stage 1 of the study selected populations that were homogeneous in nature. For instance, the choice of the KwaZulu Natal province in South Africa, and the Rift Valley province in Kenya, was based on the foundation that they are both densely populated regions with agriculture as a primary economic activity. Additionally, most of the populations in both these regions reside in the rural areas.

In South Africa, the first stage was achieved with the help of demographic data adopted from the Umlalazi Integrated Development Plan. (UIDP,

2002:1). In order for the sample size to be representative of the mixed racial population found in South Africa, the study purposefully selected suitable wards from this frame list. This was done by identifying wards with not only the highest population densities, but also a population with a fair mix of all four races i.e. Black, White, Indian and Colored.

In Kenya, the first stage was achieved with the help of Census data from the *Population and Housing Census of 1999*. By the same token, the study selected suitable sub-divisions with high densities.

6.8.2 *Simple random technique*

In stage 2, the study adopted the simple random technique to select its population from both countries. This method was deemed suitable because of the distances between respondents in rural areas. It was therefore important to minimize and control bias and cut down time and cost related to this survey.

In South Africa, wards 11, 12, 13,15,16,18 and 25 of the Umlalazi Municipality served as good starting points from which to draw four wards (Table 8). In order to avoid bias in the selection of suitable wards, the above wards were placed in a box from which four wards were randomly drawn, namely: Eshowe, Amatikulu, Gigindlovu and Mtunzini. The following table depicts the selected wards in South Africa and their female population.

Table 8 Selected wards in South Africa and female populations

	12	15	16	25
Ward	Eshowe	Amatikulu	Gingindlovu	Mtunzini
Female Population	3664	3264	4060	7738

In Kenya, the sub-divisions of Kaplamai Division, namely Kimoson, Motosiet, Sinyerere, Sitatunga, Makutano, Biribiriet, Kapsara and Kapolet, served as suitable starting points from which to draw four subdivisions (See Table 9). Having placed these subdivisions in a box, four sub-divisions were drawn, namely: Kimoson, Sinyerere, Sitatunga and Makutano.

The following table depicts the four sub-divisions of Kaplamai Division (in Kenya) that were selected, and their female population.

Table 9 Selected wards in Kenya and female populations

Sub Division	Kimoson	Sitatunga	Sinyerere	Makutano
Fgmale Population	10051	8990	10735	8990

6.8.3 Snowball technique

In stage 3 of the study, the snowball technique was applied, whereby women respondents connected to one another through direct and indirect links were identified and consequently interviewed. This exercise was useful in situations where the women respondents in the study area were widely dispersed from one another. In this way, this technique also saved on time and costs. Data was then collected and tabulated in order to draw conclusions appropriate to the rest of the women in the study.

6.9 Sample size

Approximately 400 respondents were sampled from both Kenya and South Africa. The selection of the sample size was based on Gay's (1996:125)

guidelines. According to Gay: (i) the larger the population size, the smaller the percentage of the population required to get a representative sample; (ii) for smaller populations ($N < 100$) there is little point in sampling; (iii) if the population size is around 1500, 20% should be sampled; and (iv) beyond 5000, the population size is irrelevant and a sample size of 400 is adequate. The sample size was deemed suitable because the sample population approximated the qualities and characteristics of the general population. The main categories sampled for the study included women between the ages of: 15-20 years; 21-30 years; 31-40 years; 41-50 years and 51-60 years.

6.10 Data collection techniques

Data was collected using a structured questionnaire, whereby the questionnaire was used to interview the respondents. In situations where the respondents were unable to understand English, the region's national languages, namely Swahili (in Kenya) and iSizulu (in South Africa), were used to communicate with the respondents.

6.10.1 Data analysis

The completed questionnaires from 400 respondents formed the basis of data analysis and interpretations for survey research. A coding scheme was developed and input into the Statistical Package for Social Science (SPSS). Data was then analyzed using descriptive statistics where frequencies, percentages, and means were calculated, and data presented accordingly. Relationships among variables were compared and interpretations made.

6.11 Data Collection Instruments

Based on aforementioned research design, the researcher used questionnaires and interview schedules as primary data collecting instruments.

A total of approximately 400 questionnaires were administered and divided under the following categories:

- **Section one:** personal information;
- **Section two:** the information needs and seeking behaviour of rural women: This included:
 - (i) Health information needs, purposes, sources and ICTs used
 - (ii) Educational information needs, purposes, sources and ICTs used
 - (iii) Social welfare information needs, purposes, sources and ICTs used
 - (iv) Agricultural information needs, purposes, sources and ICTs used
 - (v) Commerce and trade information needs, purposes, sources and ICTs used
- **Section three:** enhancement of quality of life and social welfare
- **Section four:** hindrances to ICT tools and services
- **Section five:** training needs.

Please refer to Appendix A, B (i) and B (ii) for an example of questionnaire, interview schedule and research questions used in the study

6.12 Research Methods (Qualitative) - Section III

6.12.1 Case Study Method

This method helped to collect and present descriptive information about women in rural communities in both Kenya and South Africa and their use of ICTs. According to Soy (1997:1), case study research also clarifies otherwise complex issues by extending strength and adding experience to what is

already known. Neumann (1997) asserts that case study research examines very many features of a few cases in depth over a given time frame. The author contends that cases to be examined may include individuals, groups, organisations, movements, events, or geographic units. An interesting definition by the Colorado State University (Writing@CSU: 1997-2004) asserts that as a form of qualitative descriptive research, a case study refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects. CSU also confirm that case study research looks intensely at an individual or a small participant pool from which it draws conclusions. According to CSU, researchers in case study research do not look for cause-effect relationships, instead placing emphasis on exploration and description. CSU cite varying types of case studies, namely: illustrative case studies, which primarily serve to make the unfamiliar familiar and provide readers with a common language with which to view the topic in question; exploratory or pilot case studies, which help in identifying questions and selecting the types of measurement prior to the main investigation; cumulative case studies, which serve to aggregate information from several sites collected at different times; and critical instance case studies, which call into question or challenge a highly generalised or universal assertion.

6.12.2. *Critical success factors (CSF)*

The critical success factor method was also applied in order to collect and present descriptive information about rural community women and their use of ICTs in Kenya. According to the Carnegie Mellon Software Engineering Institute (SEI: 2004), CSFs are an explicit representation of the key performance areas of an organization. The institute further contends that CSFs define those sustaining activities that an organization must perform well in over time in order to accomplish its mission. Rockhart (1979) further strengthens this definition by providing a useful summary of CSFs, which

includes : areas of activity in which favourable results are absolutely necessary to reach goals; areas where things must go right in order for a business to flourish; factors that are critical towards the success of the organization; activities that should receive constant and careful attention from management; and a relatively small number of truly important matters on which a manager should focus attention.

In this study, the above two methods complimented one another, as while the case study approach/method paid close attention to real life situations and observable human behaviour, the critical success factor/method paid attention to areas of activity in an organization in which favourable results were absolutely necessary to reach goals.

Other information resources reviewed include published and unpublished documents, company reports, brochures, leaflets, e-mail messages and newspaper articles. These sources of information were also useful in assessing the critical success factors of the organisations (both in South Africa and in Kenya) through the analysis of mission statements and goals.

In this study, the case studies are exploratory as they are based on a predefined objective, namely, "to audit ICT capacity in Kenya and South Africa".

6.12.3 *Historical Research*

Fraenkel and Wallen (2000) describe historical research as the systematic collection and evaluation of data to describe, explain, and understand actions or events that occurred sometime in the past. Both authors further stress the importance of historical research in creating an awareness of past events in-order to help people learn. The authors contend that historical research helps people learn how things functioned in the past and assess the

possibilities of applying these interventions to current problems and concerns.

Of interest to this study were issues concerning how ICTs have contributed to the socio-economic development of women in the rural areas of Kenya and South Africa. As this concern is central to this study, a number of *sources of information* were reviewed, including written or printed documents from primary and secondary sources of information. These included sources such as annual reports, books, newspapers, magazines, journals etc. As the use of modern ICT spans about four decades in Kenya, this approach was relevant as *personal visits were made to institutions* such as the Computer Society of Kenya, the Communication Commission of Kenya, Arid Lands Information Network, among others, to review existing documentation. The study was particularly interested in assembling views and opinions from oral statements as expressed by rural women. The use of *web information resources to review retrospective documents* in various database hosts was also of immense assistance to this study.

6.12.4 Sampling

With the help of document reviews from authors such as Estherhuysen (2002), Jebet (2003) and SANGONET (2005), non-probability (purposeful) *techniques were applied so as to create a suitable sampling frame*. In order to achieve the desired representation from the NGO frame lists provided by the South African Non-Governmental Organizations (SANGO-Net) and the Europe's Forum on International cooperation [EUFORIC] (2006), purposive sampling was first applied. This sampling technique allowed the researcher to *initially identify suitable NGOs in Kenya and in South Africa dealing with ICTs and rural women*.

The aforementioned sampling technique is described in the following stages:

6.12.4.1 *Purposive sampling*

In stage 1, the study purposefully selected organizations from two frame-lists of organizations that work with ICTs and rural women in South Africa and Kenya, and with characteristics similar to one another.

In South Africa, this list was achieved with the help of an NGO frame list adopted from Sangonet (2006). From this list of well over 380 diverse NGOs working in different fields, the study purposefully selected suitable organizations by identifying organizations such as SANGONET, as well as , Freedom for Expression Institute (FXI), National Community Radio Forum (NCRF), Ungana-Afrika and Women'snet (Sangonet, 2005:1). This served as good starting points as according to Sangonet these organizations are active in ICT policy and application issues.

In Kenya, the first stage was achieved with the help of a frame list compiled by the Europe's Forum on International Cooperation [EUFORIC] (2006). This frame list is a membership of diverse organizations, which include NGOs, research institutes and educational institutions. From this list, the study purposefully selected suitable organizations by identifying organizations such as African Women's Development Communication Network (FEMNET), Intermediate Technology Development Group (ITDG), AfriAfya and ALIN-EA. Once again, these organizations served as suitable starting points as they work with women and ICTs.

In stage 2, the study further scrutinized these organizations and identified two organizations that mostly work with rural women and ICT in South Africa and in Kenya. These four organizations included: (pls see frame lists for both Kenya and South Africa)

(I) Women's net

(II) National Community Radio Forum (NCRF)

(III) AfriAfya

(IV) Arid lands information network – East Africa (ALIN-EA).

The purposeful sampling technique was deemed suitable as they are well over 380 NGOs (SANGONET: 2006) and few of them are interested in ICT issues as they are in other development issues (e.g. housing) Sangonet (2005).

Similarly, as with the case in South Africa, very few organizations are involved in ICT issues particularly with rural Kenyan women.

Therefore, based on a Kenyan local daily newspaper report by Jebet (2003) and an article by Esterhuysen (2002), the study purposefully sampled and selected *AfriAfya* and ALIN-EA as unique organizations of interest. From a list of seven field centers which included: a Community Based Health Centre; a Rural Dispensary (Mtaa Dispensary); a Community Based Child Survival Project; a District Medical Office; a Primary School Project; a Mission Hospital and a Rural Community Training Center (all running under the umbrella of *AfriAfya*), the study purposefully selected Mtaa Dispensary as being suitable. Besides the fact that this dispensary uses ICTs to harness and disseminate information, a good number of rural women regularly call in for consultation. It was also noted in a report in the local dailies by Jebet (2003) that *AfriAfya* had recently won the prestigious *Tech Museums Awards of the Tech Museum of Innovation*, located in San Jose, California. The award was presented in partnership with the United Nations University and Santa Clara University Center for Science, Technology and Society. According to Jebet (2003), the cash prize award of US\$ 50,000, is designed to honor individuals, profit companies, public and non-profit making organizations which are applying technology to improve health, education, gender equality, environment and the economy in marginal areas.

Similarly, ALIN-EA was of particular interest to the study as according to Esterhuysen (2002), "African NGO's have been innovative in using ICTs in ways consistent with available infrastructure and capacity", and "have distinguished themselves in making use of wireless technologies and integrating new and traditional media". The author not only singled out ALIN-EA and their use of Worldspace Foundation's digital satellite broadcasting network, but also, other NGOs like *Satellite HealthNet*. While *Satellite Healthnet* uses short-wave modems to establish connections in remote areas, *Econews Africa* uses FM radio linked to the Internet and *Women'sNet* works with community radio in South Africa.

Other information resources reviewed included published and unpublished documents, company reports, brochures, leaflets, e-mail messages and newspaper articles. These sources of information have also been useful in assessing the critical success factors of both organizations through the analysis of mission statements and goals.

6.12.4.2 Sample size

A sample size of 4 four organisations (2 in Kenya and 2 in South Africa) was deemed suitable for the study. This sample size was assumed suitable as very few organisations focusing on women are involved in ICTs issues and application in both Kenya and South Africa. The main categories of key informants that were sampled for the study included women in strategic and middle management positions of the organizations.

6.12.5 Data collection techniques

Data was collected using an open-ended interview schedule and also a tape recorder. As key informants in both Kenya and South Africa understood English, the interviews used English language as the language of proficiency.

6.12.6 Data analysis and presentation

The completed 400 questionnaires and case studies formed the basis of data analysis and interpretations. A coding scheme was developed for the questionnaires and input into the Statistical Package for Social Sciences (SPSS). Data was then analyzed using descriptive statistics where frequencies, percentages, means and p-values were calculated. Data was then presented accordingly. Relationships among variables and interpretations were also made.

According to Mugenda and Mugenda (1999:174) content analysis involves logical groupings of data with similar messages. In this study, open-ended responses and recorded interviews were analysed using content analysis, methodology.

6.13 Problems encountered

A major problem that was encountered by this study involved distance. This is because most rural women in *both South Africa and Kenya reside in marginalised areas that have poor road infrastructure*. The researcher was therefore forced to hire a vehicle for transportation in order to conduct the field survey. This exercise proved very costly.

Most rural households are also widely dispersed from one another. The researcher was therefore forced to travel long distances in search of respondents. This was very time consuming.

6.14 Summary

The chapter has discussed the research methods, designs and techniques applied in the study. The survey research method and case study was

utilised in the study. Both qualitative and quantitative research designs were used. The qualitative methods used in data collection included face-to-face interview, case study, critical success factors and document review. The interview was used to obtain information from the informants of the study. In the quantitative method, a structured questionnaire was used to solicit for information from rural women in both Kenya and South Africa.

In Kenya, rural women were drawn from the sub-divisions of the Kaplamai Division in Trans-Nzoia district namely: Kimoson, Sinyerere, Siatunga and Makutano. In South Africa, rural women were drawn from the magisterial districts of Umlalazi i.e. Eshowe, Amatikulu, Gigindlovu and Mtunzini. The key informants of the study were drawn from four organisations (Women'snet and NCRF in South Africa and AfriAfya and ALIN-EA in Kenya).

The study used both probability and non-probability sampling techniques. The non-probability sampling technique used was purposive and snowball, while the probability sampling technique used was simple random. The rural women were randomly selected using census household data from both Kenya and South Africa. Simple random sampling was used to draw data from each district/subdivision. The snowball technique was then used to identify and interview the rural women. The purposive sampling method was used to select key informants who included, project officers, program managers and a communications officer.

Completed questionnaires were analysed using Statistical Package for Social Sciences (SPSS) and frequencies, percentages, means, and standard deviations were calculated and presented accordingly. Content analysis was used for open-ended responses and recorded interviews.

The next chapter (seven) presents and analyses data obtained from the field.

CHAPTER SEVEN

DATA PRESENTATION AND ANALYSIS

7.1 Introduction

The purpose of this study was to investigate and identify ICTs that provide access to, and enable the use of information, enhance quality of life, and improve the economic standards of rural women by creating a model for the development, management, exploitation and use of ICTs in an African rural environment.

The survey research method was used during interviews with women aged 16-60 randomly selected from census household data to form a sampling size of 400 respondents.

In Kenya, survey data was obtained from the sub-divisions of the Kaplamai Division in Trans-Nzoia district, i.e. Kimoson, Sinyerere, Sitatunga and Makutano. The sampling frame included: small-scale traders (68; 34%); housewives (29; 14.5%); educators/teachers (27; 13.5%); farmers (26; 13.0%); students (11; 5.5%); domestic workers (10; 5.0%); preachers (10; 5.0%); farm workers (6; 3.0%); large-scale entrepreneurs (5; 2.5%); nurses (4; 2.0%); clerical workers (2; 1.0%); and community development workers (2; 1.0%).

In South Africa, a similar sampling frame included: small-scale traders (58; 29.0%); housewives/homemakers (48; 24.0%); farm employees (25; 12.5%); domestic workers (18; 9.0%); educators/teachers (16; 8.0%); students (15; 7.5%), entrepreneurs managing large-scale enterprises (3; 1.5%); clerical workers (9; 4.5%); community development workers (6; 3.0%) and two preachers (2; 1.0%). Sampling data was obtained from

census household data from the magisterial districts of Umlalazi, i.e. Eshowe, Amatikulu, Gigindlovu and Mtunzini.

By using the snowball technique, women respondents who were directly and indirectly linked were identified and consequently interviewed. The survey research design was found suitable given the large number of respondents. Based on this, the survey instrument contained questions about the respondents' demographic profile (race, age, education, and occupation); information needs and purposes; hindrances; the use and availability of ICTs; and areas in which ICTs serve women best.

The survey instrument was based on the following research objectives:

1. To identify the ICT information needs and of rural women in areas such as health, education, agriculture, social welfare, entertainment, and commerce and industry in both Kenya and South Africa.
2. To analyse and determine the ICT training needs of rural women in Kenya and South Africa.

7.2 Survey data obtained from 400 rural women, aged 16 - 60, from both Kenya and South Africa

7.2.1 Demographic profile of the respondents

Respondents were asked questions that sought to ascertain personal information such as their age, field of occupation and educational attainment. These structured questions were meant to determine relationships between demographic characteristics and the purposes and uses of ICTs.

The overall response rate of the respondents was 100%, as the researcher and research assistants administered the survey.

7.2.2 Age group

Data obtained from rural KZN indicates that the highest number of respondents were between the ages of 31-40 years (66; 33.0%), followed by respondents in the 13-20 year age group (41; 20.5%). Respondents between the ages of 41-50 and those over 50 ranked third and fourth, with 35 (17.5%) and 37 (18.5%) respectively. The lowest number consisted of 21 (10.5%) respondents between the ages of 21-30 years.

In Kenya, the highest number of respondents were between the ages of 31-40 years (83; 41.5%), followed by respondents between 13-20 years (58; 29%). Respondents between the ages of 41-50 and those over 50 came third and fourth, with 29 (14.5%) and 19 (9.5%) respectively. The lowest number consisted of 11 (5.5%) respondents between 21-30 years.

Table 10
Age of respondents [n=200] in South Africa and [n=200] in Kenya

Category	South Africa		Kenya		P-Value
	Frequency	Percent	Frequency	Percent	
31-40 years	66	33.0	83	41.5	0.0795
13-20 years	41	20.5	58	29.0	0.0496
41-50 years	35	17.5	29	14.5	0.4137
Over 50 years	37	18.5	19	9.5	0.0000
21-30 years	21	10.5	11	5.5	0.0000
Total	200	100	200	100	

The P-Value for age group levels in both Kenya and South Africa indicates that the:

1. P-Value of ages 31-40 is greater than 0.05 (no significant difference)
2. P-Value of ages 13-20 is less than 0.05 (significant difference)
3. P-Value of ages 41-50 is greater than 0.05 (no significant difference)
4. P-Value of ages over 50 is less than 0.05 (significant difference)
5. P-Value of ages 21-30 is less than 0.05 (significant difference)

Therefore, there is a significant difference between rural women in the age groups of 13-20, 21-30, and those over 50 in South Africa and Kenya. More specifically, the above indicates that while there are more respondents between the ages of 13-20 residing in the rural areas of Kenya, there are more respondents between the ages of 21 – 30 residing in the rural areas of South Africa. Alternatively, there is a larger percentage of respondents over the age of 50 residing in the rural areas of South Africa than in Kenya.

7.2.3 Education

In rural Kwa-Zulu Natal (KZN) [SA], survey results (as seen in table 11) indicate that most respondents (81; 40.5%) had acquired secondary education, while 62 (31.0%) had primary education. However, only 34 (17.0%) respondents had acquired tertiary-college/varsity education, with 23 (11.5%) respondents reportedly having no schooling at all. Therefore, an average of 72 (35.8%) respondents had acquired basic education.

In rural Rift Valley Province (RVP) [Kenya], survey results indicate that most respondents (71; 35.5%) had primary education, 66 (33%) had secondary education, and 33 (16.5%) had obtained tertiary-college/varsity education.

30 (15%) respondents had no schooling at all. On average, 69 (34.2%) respondents had obtained basic education.

Table 11
Respondents' educational attainment [n=200] in South Africa and [n=200] in Kenya

Education levels	South Africa		Kenya		P-Value
	<i>f</i>	%	<i>f</i>	%	
Secondary	81	40.5	71	35.5	0.3036
Primary	62	31.0	66	33.0	0.6686
Tertiary-College/ Varsity	34	17.0	33	16.5	0.8936
No schooling	23	11.5	30	15.0	0.3025
Total	200	100	200	100	

The P-Value for education levels in both Kenya and South Africa revealed the following:

- The P-Value of secondary educational attainment is greater than 0.05 (no significant difference)
- The P-Value of primary educational attainment is greater than 0.05 (no significant difference)
- The P-Value of tertiary/varsity education is greater than 0.05 (no significant difference)
- The P-Value of no schooling is greater than 0.05 (no significant difference)

The above illustrates that there is no significant difference between the education levels of rural women in South Africa and Kenya. While an average of 34% have basic education in both Kenya and South Africa, well over 10% of the respondents in both countries have no schooling at all.

7.2.4 Occupation

In terms of the occupations of rural women in KZN (S.A), the empirical results of the study indicate that 58 (29.0%) respondents are small-scale traders, followed by those who work as housewives/homemakers (48; 24.0%). Other categories are farm workers (25; 12.5%), domestic workers (18; 9.0%), educators/teachers (16; 8.0%) and students (15; 7.5%). 3 (1.5%) respondents were entrepreneurs owning large-scale enterprises, i.e. a guesthouse, a sugar cane plantation and a fruit farm. Only 9 (4.5%) respondents worked as clerical and community development workers (6; 3.0%). There were two preachers (2; 1.0%).

In RVP (Kenya), the study's empirical results indicate that 68 (34%) respondents are small-scale traders, followed by: housewives, 29 (14.5%); educators/teachers, 27 (13.5); farmers, 26 (13.0); and students, 11(5.5%). Domestic workers and preachers accounted for 10 (5.0%) each. This is closely followed by farm workers (6; 3.0%); large-scale entrepreneurs (5; 2.5%); nurses (4; 2.0%); clerical workers (2; 1.0%) and community development workers (2; 1.0%).

According to the study, the single largest occupation of the respondents in both Kenya and South Africa is that of small -scale traders.

The P-Value for occupation levels in both Kenya and South Africa further reveals the following:

- The P-Value of traders is greater than 0.05 (no significant difference)

- The P-Value of housewives is less than 0.05 (significant difference)
- The P-Value of farm workers is less than 0.05 (significant difference)
- The P-Value of domestic workers is less than 0.05 (significant difference)
- The P-Value of students is less than 0.05 (significant difference)
- The P-Value of educators/teachers is less than 0.05 (significant difference)
- The P-Value of entrepreneurs is less than 0.05 (significant difference)
- The P-Value of clerical workers is less than 0.05 (significant difference)
- The P-Value of community development workers is less than 0.05 (significant difference)

The P-values, therefore, indicate that there is a significant difference between the occupations of rural women in South Africa and Kenya. The survey results indicate that with the exception of traders and preachers (in which percentages for Kenya are higher), there is a higher percentage of housewives, farm workers, domestic workers, students, educators/teachers, entrepreneurs, clerical workers and community development workers in South Africa than in Kenya. The study further illustrates that whereas Kenya has a fair share of farmers and nurses, South Africa has no record of these two occupations amongst its rural respondents.

Table 12
Respondents' occupation [n=200] in South Africa and
[n=200] in Kenya

Occupation	South Africa		Kenya		P-Value
	<i>f</i>	%	<i>f</i>	%	
Trader	58	29.0	68	34.0	0.2824
Housewife/homemaker	48	24.0	29	14.5	0.0164
Farm worker	25	12.5	6	3.0	0.0000
Domestic worker	18	9.0	10	5.0	0.0000
Student	15	7.5	11	5.5	0.0000
Educator/teacher	16	8.0	27	13.5	0.0000
Entrepreneur (large scale)	3	1.5	5	2.5	0.0128
Clerical worker	9	4.5	2	1.0	0.0000
Comm. Dev. Worker	6	3.0	2	1.0	0.0000
Preacher	2	1.0	10	5.0	0.0000
Farmer	-	-	26	13.0	
Nurse	-	-	4	2.0	
Total	200	100	200	100	

7.3 ICTs frequently used to access/receive educational, business/ trade, health, agricultural and social welfare information in Kenya and South Africa

The survey took into account the possibility that an individual could use a combination of different technologies while accessing or seeking information. Respondents were therefore at liberty to name all ICTs used to access information, whether traditional or modern. By capturing these responses, the survey was able to ascertain the ICTs that the respondents accessed and frequently used. Notably, the respondents also use other sources to obtain

information, such as printed material, libraries, friends, neighbours etc. (see table 14).

Table 13
ICTs frequently used to access/receive educational, business/ trade, health, agricultural and social welfare information in Kenya and South Africa. [n=400]

ICTs	Education		Health		Business		Agriculture		Social Welfare		AV	
	K %	SA %	K %	SA %	K %	SA %	K %	SA %	K %	SA %	K %	SA %
Radio	77	80	88	81	65	55	65	71	77	80	74.4	73.4
Television	41	41	33	44	36	34	36	35	43	43	37.8	39.4
Films	13	16	24	20	7	18	9	26	20	16	14.6	18.2
Cell-phone	12	13	20	18	7	13	7	14	18	17	12.8	15.0
Telephone	4	13	3	4	4	5	4	12	5	17	4.0	10.2
Video	4	15	5	6	3	6	5	1	6	11	4.6	7.8
Computer/ Internet	3	11	-	6	1	3	-	1	1	6	1.0	5.4
Mobile cinemas	3	4	4	5	3	1	3	3	3	6	3.2	3.8
CD-ROM	-	2	-	2	-	1	-	-	-	-	-	1.0

7.3.1 Education

Within the field of education, the information needs of the respondents in rural KZN (SA) varied from student services/colleges (48.8%), to course work/research topics (25%), further studies (7.5%) and funding sources (7.5%), occupational information (5%), social work (1.3%) and business management (1.3%).

Reasons for yielding educational information ranged from personal welfare and better living standards, to study assignments, counselling, further studies and job opportunities. The table above reveals that the radio is highly prevalent as a channel of information (160; 80%). The use of TV is relatively low (82; 41%). While 32 (16%) respondents also use film to access educational information, a similar number of respondents 25 (13%) use the cell-phone and telephone. Videos are also common (30; 15%). In comparison to other sectors, the educational sector has the highest number of respondents using the computer/internet (22; 11%). Only 8 (4%) respondents use mobile cinemas and CD-ROMs (2%) to access educational information.

In rural RVP (Kenya), the information needs of respondents ranged from course work/research topics (23.5%), to student services/colleges (22%), occupational information (12%), pre-school/primary school information (11.0%), further studies (10.5%), business education/financial management (9.5%), teaching (8.5%) and curriculum studies (3.0%).

Reasons for yielding educational information ranged from personal welfare and better living standards, to study assignments, counselling, child welfare, job opportunities, study assignments and future careers. The table above reveals that the radio is also highly prevalent among users (154; 77%). The

TV is used by 81 (41%) respondents. While 25 (13%) respondents use films as a source of information, there are more respondents who use the cell phone (24; 12%) than the telephone (7; 4%). Video is used by 7 (4%) respondents. An equal number of respondents (5; 3%) use the computer/internet and the mobile cinema respectively.

7.3.2 Health

With regard to health, the information needs of the respondents from rural KZN (S.A) ranged from respiratory illnesses e.g. TB and asthma (21.3%), to HIV/AIDS (21.3%), arthritis (10.6%), terminal and chronic diseases such as cancer (6.3%), waterborne diseases (6.3%), diet/nutrition (6.3%), rheumatism (5.0%), family planning (5.0%), rabies (4.0%), snake bites (3.8%), sexually transmitted diseases (3.8%), dentistry (3.8%), and fits (2.5%). Reasons for obtaining this information ranged from personal welfare, to children's welfare and general awareness. The radio scored highly as a channel of information, as survey results revealed that 162 (81%) respondents use it to access information. The TV is equally important, as 88 (44%) respondents use it on occasion to source their health information. While 40 (20%) respondents use film to access health information, there are more respondents who use the cell-phone (35; 18%), than the telephone (8; 4%). An insignificant number of respondents (12; 6%) use the computer/internet and video (12; 6%) for accessing health information. Only 10 (5.0%) use the mobile cinema, while 3 (2%) use the CD-ROM.

With regard to the health information needs of rural respondents from RVP (Kenya), the information needs ranged from family planning/gynaecology (32.5%), to tropical diseases e.g. malaria (24.0%), HIV/AIDS (17.0%), respiratory illnesses/coughs (7.0%), cancer (2.5%), Sexually Transmitted Infections (3.5%), snake bites (3.0), waterborne diseases (2.5%), diet/nutrition (1.5%), diabetes (1.0%), dentistry (3.5%), and fits (2.0%).

The reasons for obtaining this information ranged from personal welfare, to child and family welfare, and in some instances, for general awareness. The radio came first as a channel of information (176; 88%), followed by the TV, which is only used by 65 (33%) respondents. While 47 (24%) respondents use films as their channel of information, 40 (20%) respondents use the cell phone and only 5 (3%) use the telephone. Likewise, 10 (5.0%) respondents use the video, and only 7 (4.0%) respondents use mobile cinemas. Notably, there are no respondents who use the computer/internet and CD-ROM for their health information needs.

7.3.3 Business and Trade

In the arena of business and trade, areas in which respondents in RVP (Kenya) required information ranged from starting up a business (30.0%), pricing/marketing (14.0%), finance/book-keeping (12.5%), planning/management (10.5%), supplies/purchasing (8.0%), animal husbandry (7.0%), poultry keeping (7.0%), craftsmanship (5.5%), and exchange rates (5.5%). Reasons for obtaining this information include stocking, embroidery, financial management, business techniques, better living standards, profit making, income generation and family welfare.

Survey findings for business and trade reveal that while 130 (65%) respondents use the radio, 71 (36%) use the TV for their information needs. Notably, 13 (7%) respondents use films as their channel of information, while 14 (7%) use the cell phone. Only 8 (4%) use the telephone, compared to a slightly higher number of respondents (14; 7%) who use the telephone. The use of the computer/internet is negligible, with only 2 (1%) respondents using it as their channel. None of the respondents use the CD-ROM. The video is used by 6 (3%) respondents, while mobile cinemas are used by 5 (3%).

In KZN (SA), respondents required information ranging from starting up a business (46.3%), to cookery (13.8%), pricing/marketing (10%), purchasing/supplies (10%), stock management (7.1%), financial management/book-keeping (6.3%), horn – covering/tourism (2%), hair and beauty salons (2.5%) and poultry and animal husbandry (2%). These needs seem to be closely related to the findings of a study by Ikoja-Odongo (2002a). Reasons for obtaining this information ranged from skills enhancement, embroidery, stocking, financial help, financial management, business techniques, income-generation, seeking customers and family welfare.

Survey findings for business and trade reveal that while 110 (55%) respondents use the radio alone for their information requirements, 68 (34%) use the TV. The number of those who use film to obtain business information is 9 (18%). Notably, although not necessarily unusual in modern times, there are more respondents who use the cell-phone (25; 13%), than the telephone (10; 5%). Videos are also accessed by 12 (6%) respondents for business related needs. A negligible number of respondents (6; 3%) use the computer/internet to obtain information. There were two respondents who used the mobile-cinema, and one who used CD-ROMs.

7.3.4 Agriculture

The agricultural information requirements of the respondents from KZN (SA) included farm inputs/new technology (28.8%), crop type/diseases (22.5%), soil types/fertility (18.8%), livestock keeping (13.8%), herbicides/fencing (10.0%), and gardening/crop management (6.3%). This information was required for good harvests, enhancing animal fertility, preventing crop and animal diseases, improving sales, aesthetics and spiritual offerings. Most of those interviewed (142; 71%) used the radio, while less than half of this number 70(35%) used the TV. Cell-phones stood at 28 (14%), while the

telephone was used by 23 (12%) respondents. Only 6 (3%) respondents use the mobile cinema, while two (1%) respondents use the computer/internet and video respectively.

The agricultural information needs of the respondents from RVP (Kenya) ranged from animal husbandry (35.5%), farm inputs/new technology (47%), soil type (5.5%), crop type/diseases (4.5%, 1.5%) and gardening/crop management (6.0%). In turn, this information was required for good harvests, farming, enhancing herd fertility, prevention of diseases, aesthetic values and for health. Most of those interviewed (130; 65%) use the radio for their information needs, while 71 (36%) use the TV. While 17 (9%) respondents use films for their information needs, there are more respondents who use the cell-phone (14; 7%), than those who use the telephone (8; 4%). The video is used by 10 (5%) respondents for agricultural information needs. Only 5 (3%) respondents use mobile cinemas. Notably, there are no respondents who use the computer/internet and CD-ROM.

7.3.5 Social Welfare

Social welfare information needs in rural KZN (SA) ranged from water resources and pit latrines (42.5%) to music/religious gatherings (23.8%), travel/holidays (10%), and community projects/women group activities (8.8%), pension (8.8%) and shopping/movies (6.3%). Reasons for obtaining this information ranged from leisure activities, entertainment, spiritual growth and relaxation and improved standards of living. Once again, the radio as a channel of information scored high (160; 80%). The TV (86; 43%) was equally useful. Films (32; 16%) were also used as a channel of information. The use of the cell-phone and the telephone stood at 34 (17%) and 34 (17%) respectively. The video is used by 22 (11%) respondents to source information, compared to 12 (6%) respondents who use the computer/internet for their information requirements.

In Kenya, the need to acquire social welfare information ranged from community projects/social meetings (154; 77%), water resources/pit latrines (11; 5.5%), spiritual matters (21; 10.5%), sports (4; 2%), shopping/travelling (3; 1.5%) and pension/housing (7; 3.5%). Reasons given for accessing this information ranged from leisure activities, spiritual growth, women's empowerment, improved standards of living, relaxation and for health reasons. The radio as a channel of information came first, as 153 (77%) respondents use it to access social welfare information. The TV is used by 85 (43%) respondents. Films, on the other hand, are used by 39 (20%) respondents, while the cell-phone is used by 36 (18%) respondents. Notably, the telephone is used by only 9 (5%) respondents. The computer/internet plays no significant role, as only 2 (1%) respondents use it for their information needs. While 6 (3%) respondents use mobile cinemas, there were no respondents who use the CD-ROM.

On the whole, the radio is evidently highly accessed and is used by approximately 73% of the rural women in South Africa, particularly for education, health and social welfare needs. The TV plays an equally important role in accessing information, as 39% of the respondents use it for their information requirements. The cell-phone has a clear advantage over the telephone, as 15% of the respondents use it, compared to 10.2% who use the telephone. Those who are mostly in the field of education (30; 15%) and social welfare (22; 11%) use videos. Although the computer/internet maintains a dismal average of only 5.6%, it is mostly used by those in the field of education (22; 11%).

Kenya's empirical results indicate that radio and television are the most commonly used ICTs amongst rural women in Kenya. An average of 74.4% use the radio for their information needs, while the TV is used by an average of 37.8%. The cell-phone has a comparative advantage over the telephone as it is used by 12.8% of the respondents. The latter is used by only 4.0%. Notably, the use of films as a channel of information is on average higher

than the cell-phone and the telephone, as 14.6% use it to source information. While 4.6% of the respondents use the video, 3.2% use mobile cinemas. Invariably, data indications are that the computer/internet and the CD-ROM have no value amongst rural women in Kenya.

Additionally, the P-Value for ICTs frequently used to access/receive educational, business/ trade, health, agricultural and social welfare information in both Kenya and South Africa indicates that:

- The P-Value of radios is greater than 0.05 (no significant difference)
- The P-Value of television is greater than 0.05 (no significant difference)
- The P-Value of films is greater than 0.05 (no significant difference)
- The P-Value of the cell-phone is greater than 0.05 (no significant difference)
- The P-Value of the telephone is less than 0.05 (significant difference)
- The P-Value of video is less than 0.05 (significant difference)
- The P-Value of computer/internet is less than 0.05 (significant difference)
- The P-Value of mobile cinemas is greater than 0.05 (no significant difference)

From the above results the study can safely deduce that an average of 74% of the respondents from both South Africa and Kenya use the radio as a medium of information access. Correspondingly, an average of only 38% use the TV for their information needs. Whereas 10.2% of the respondents in KZN (SA) use the telephone, only 4% from RVP (Kenya) use the telephone. In both countries, the use of modern technologies such as the computer/internet is negligible.

7.4 Alternative sources of information for educational, business/trade, health, agricultural and social welfare information amongst rural women in Kenya and South Africa.

In this question, respondents were at liberty to mention all or any other sources of information that they used in their quest for information, aside from ICTs. This question aimed to gather information that would help determine the effectiveness and efficiency of rural information systems in the rural environments of Kenya and South Africa.

In table 5, survey results indicate that family (53.2%), friends (43.3%) and neighbours (38.0%) form the bulk of alternative sources of information amongst the respondents in RVP (Kenya). This is closely followed by community leaders (38.6%), books (30.9%), exhibitions/trade fairs (20.8%), area leaders (15.8%), educators (10.8%) and social/extension workers. Other sources such as traditional healers (7.8%), information centres (4.9%), newspapers (2.4%), magazines (2.4%), farmer's cooperatives (1.5%) and nurses/midwives (1.5%) are less used as sources of information.

Table 14

Alternative sources of information for educational, business/ trade, health, agricultural and social welfare information amongst women in Kenya [n=200] and in South Africa [n=200]

Sources of Information	Education		Health		Business		Agriculture		Social Welfare		Av		P-Value
	SA f	K f	SA f	K f	SA F	K f	SA f	K F	SA f	K f	SA %	K %	
Newspapers	5	5	3	2	5	8	5	4	15	5	3.3	2.4	0.0469
Magazines	5	5	3	2	5	8	5	4	15	5	3.3	2.4	0.0469
Family	160	54	133	110	43	88	43	111	83	169	46.2	53.2	0.1623
Friends	103	73	100	81	133	65	93	69	113	145	54.2	43.3	0.0298
Neighbours	90	64	88	79	128	73	73	86	105	78	48.4	38.0	0.0364
Books	68	46	75	72	58	91	43	69	53	31	29.7	30.9	0.7941
Information Centres	8	11	5	6	8	10	23	18	-	4	5.5	4.9	0.2305
Community leaders	60	41	30	97	13	55	25	80	83	113	21.1	38.6	0.0002
Area leaders	-	-	-	-	-	-	3	5	13	68	4.0	15.8	0.0000
Traditional healers	-	-	13	11	-	11	15	16	25	24	8.8	7.8	0.0081
Social/Ext. Workers	10	6	43	46	-	12	30	25	3	4	10.8	9.3	0.0000
Educators	90	60	13	14	5	11	23	10	-	13	16.3	10.8	0.1089
Farmers Ass.co-operatives	-	-	-	-	-	-	-	3	-	-	-	1.5	-
Exhibitions/ Trade Fairs	-	-	5	-	23	54	10	29	-	-	6.3	20.8	0.0000
Nurses/Mid-wives	-	-	23	1	-	-	-	-	23	2	11.5	1.5	0.3025
Local/City councils	8	-	-	-	3	-	8	-	8	-	3.3	-	-
Schools	3	6	-	3	-	-	3	-	-	3	1.5	2.0	0.1890

Similarly, friends (54.2%), neighbours (48.4%) and family (46.2%) are highly favoured as alternative sources of information amongst the respondents from KZN (SA). Other sources include books (29.7%), community leaders (21.1%), educators (16.3%), social/extension workers (10.8%) and nurses/midwives (11.5%). Information centres (5.5%), magazines (3.3%) and newspapers (3.3%) are not popular sources of information amongst the rural women in South Africa.

The P-Value for alternative sources of information for educational, business/trade, health, agricultural and social welfare information amongst women in Kenya and in South Africa indicates that the:

- P-Value of newspapers is less than 0.05 (significant difference)
- P-Value of magazines is less than 0.05 (significant difference)
- P-Value of family is greater than 0.05 (no significant difference)
- P-Value of friends is less than 0.05 (significant difference)
- P-Value of neighbours is less than 0.05 (significant difference)
- P-Value of books is greater than 0.05 (no significant difference)
- P-Value of information centres is greater than 0.05 (no significant difference)
- P-Value of community leaders is less than 0.05 (significant difference)
- P-Value of area leaders is less than 0.05 (significant difference)
- P-Value of traditional healers is less than 0.05 (significant difference)
- P-Value of social/extension workers is less than 0.05 (significant difference)
- P-Value of educators is greater than 0.05 (no significant difference)
- P-Value of neighbours is less than 0.05 (significant difference)
- P-Value of exhibitions/trade fairs is less than 0.05 (significant difference)
- P-Value of nurses/midwives is greater than 0.05 (no significant difference)

- P-Value of schools is greater than 0.05 (no significant difference)

The above information illustrates that there is a higher use of alternative sources of information, such as newspapers, magazines, friends and neighbours, in rural KZN (SA) than in RVP (Kenya). However, community leaders, area leaders and trade fairs/exhibitions play a more significant role in RVP (Kenya) than in KZN (SA).

7.5 Comments on the use and availability of ICTs in rural KZN (South Africa) and rural RVP (Kenya)

In table 15, respondents were asked to give their personal responses to an open-ended question regarding the use and availability of ICTs in their community. The aim of this question was to capture varying opinions and attitudes related to ICT use and accessibility in their community. Data was then analyzed using content analysis. The survey revealed that a significant number (57; 28.5%) of the respondents in KZN (SA) felt that ICTs were not only unavailable and inaccessible to them, but also difficult to use. Similarly, 25 (12.5%) respondents felt that ICTs are costly and unaffordable. Coincidentally, the number of those who found ICTs to be handy (20; 10%) and those who felt that ICT centres should be established near rural women (20; 10%) were similar. 9 (9.5.0%) respondents were of the opinion that ICTs were easily available and accessible, while 18 (9.0%) felt that ICTs are affordable. A few respondents attuned to problems with infrastructure, such as lack of power (13; 6.5%) and poor TV and radio networks (10; 5.0%).

Table 15
Comments on the use and availability of ICTs in the community. N=200 (South Africa)

Comments	Frequency	Percent
Unavailable, difficult to use	57	28.5
ICTs are costly & unaffordable	25	12.5
ICTs are handy	20	10.0
Establish ICT centres near rural women	20	10.0
Easily available and accessible	19	9.5
ICTs are affordable	18	9.0
Lack of power	13	6.5
Great improvement in ICTS	10	5.0
Poor TV& Radio networks	10	5.0
There's no trust in ICTs	8	4.0
Total	200	100

In table 16, results from Kenya indicate that a large number of the respondents (63; 31.5%) believed that ICTs were unaffordable, followed by 48 (24%) stating them as unavailable, and 28 (14%) as inaccessible.

Therefore on average, the survey portrayed that 139 (69.5%) respondents felt that ICTs were either too far, too costly or entirely unavailable. Only 16 (8%) respondents acknowledged the usefulness and availability of ICTS, citing that they were "handy" (2; 1%) or "improved access to information" (14; 7%).

Table 16 Comments on use and availability of ICTs in the Community. (Kenya)**N=200**

Comments	Kenya	
	Frequency	Percent
Would like affordable ICTs	63	31.5
ICTs should be made available	48	24
ICTs should be made accessible	28	14
<i>There is improved information access with the use of ICTs</i>	14	7
Use of ICTs depends on ones lifestyle	11	5.5
ICTs are very handy	2	1
<i>There is need for ICT centres in rural areas</i>	15	7.5
<i>TV/ Radio networks are poor</i>	2	1
Lack of power hinders use of ICTs	15	7.5
Total	200	100

7.6. How ICTs have enhanced the rural women's quality of life

A number of arguments have been raised as to whether or not ICTs contribute to improving a society's quality of life. With this in mind, a structured question making use of the likert scale was designed. Respondents were expected to answer the question based on areas in which ICTs have served them best. In this question, the scale of 4 denoted a high and favourable response, (i.e. "always"), followed by 3 (i.e. "often"), 2 (i.e. "sometimes"), 1 (i.e. "never") and a "not applicable" scale. By calculating the average for each area listed, the study was able to arrive at conclusive remarks.

Table 17. How ICTs have enhanced the women's quality of life in South Africa (n=200) and Kenya (n=200).

Activity	(4)		(3)		(2)		(1)		N/a		Av=% 4+3+2		p- Value
	Always		Often		Some-Times		Never						
	SA	K	SA	K	SA	K	SA	K	SA	K	SA	K	
To listen to news	157	121	12	35	14	26	12	12	5	6	91.5	91.0	0.8596
In touch with family and friends	160	85	2	35	8	54	24	20	6	6	85.0	87.0	0.5647
Entertainment	88	117	35	42	20	30	47	6	10	5	71.5	94.5	0.0000
To fax doc.	41	11	17	5	30	16	90	162	22	6	44.0	16.0	0.0000
Data proc.	38	9	5	6	15	31	115	147	27	7	29.0	23.0	0.1721
For research purposes	20	7	15	13	18	73	130	103	17	4	26.5	46.5	0.0431
E-commerce/ Trade	10	10	13	4	18	20	118	160	41	6	20.5	17.0	0.3704
Contact business Support Agen.	25	12	3	14	10	46	138	123	24	5	19.0	36.0	0.0002
Internet/ related serv.	20	3	6	7	12	34	160	152	2	4	19.0	22.0	0.4578
Distance Education	28	11	5	20	6	46	134	120	27	3	16.5	38.5	0.0000

Evidently, ICTs enable most women to keep abreast of current affairs. Many rural women *underscored the role ICTs play in daily news broadcasts*. Most (91.5% in South Africa and 91.0% in Kenya) respondents felt that ICTs, particularly the radio and TV, helped them socially enrich their lives. This was followed closely by the need to keep in touch with family and friends (81.0% in South Africa and 87.0% in Kenya). To most respondents, the *mobile phone was particularly useful in this regard*. Under entertainment, the respondents listed the ability to listen to music and other entertaining programs as important. With the help of ICTs, this service recorded the highest result overall, with 94.0% for Kenya and 71.5% for South Africa. Interestingly, although the use of the fax machine (44%) *stood out as an important activity, particularly in South Africa, it scored dismally in Kenya (16.0%)*.

Additionally, the P-Value on how ICTs have enhanced the rural women's quality of life illustrates that the:

- P-Value of listening to news is greater than 0.05 (no significant difference)
- P-Value of keeping in touch with family and friends is greater than 0.05 (no significant difference)
- P-Value of entertainment is less than 0.05 (significant difference)
- P-Value of faxing documents is less than 0.05 (significant difference)
- P-Value of data processing is greater than 0.05 (no significant difference)
- P-Value of research is less than 0.05 (significant difference)
- P-Value of e-commerce/trade is greater than 0.05 (no significant difference)
- P-Value of contacting business support agencies is less than 0.05 (significant difference)

- P-Value of internet-related services is greater than 0.05 (no significant difference)
- P-Value of distance education is less than 0.05 (significant difference)

From the above, this study can deduce that respondents in both RVP (Kenya) and KZN (SA) feel that ICTs help them in accessing/receiving news items and keeping in touch with family and friends. There is, however, a higher percentage of respondents in RVP (Kenya) than in KZN (SA) who feel that ICTs enhance their lives through entertainment, for research purposes and for distance education.

7.7. Hindrances facing the use and availability of ICTs in the rural areas of KZN (South Africa)

In table 18, respondents were asked questions relating to ICT hindrances. Using a close-ended questionnaire, appropriate multiple answers were selected. Notably, 113 (56.5%) respondents felt that ICT services were unaffordable, with another 93 (41.5%) stating that ICTs were too far removed from them. Other inhibitors were time (93; 46.5%), computer illiteracy (42; 21.0%), poor roads (25; 12.5%) and cultural taboos (15; 7.5%). The figures below clearly illustrate that problems of access and exclusion for women in rural areas are evident, as an average of 96 (48%) respondents faced problems ranging from in-affordability to distance and time.

Table 18

Hindrances on the use and availability of ICTs in rural South Africa N= 200 and in Kenya N=200

Impeding factors	SA		Kenya	
	f	%	f	%
h ICT services are unaffordable	113	56.5	64	32.0
Time	93	46.5	27	13.5
ICT services are far away	82	41.0	38	19.0
Computer illiteracy	42	21.0	32	16.0
Roads are poor	25	12.5	16	8.0
Cultural Taboos	15	7.5	23	11.5

7.8 Hindrances facing the use and availability of ICTs in the rural areas rural areas of RVP (Kenya).

In the table above, respondents were asked questions relating to ICT hindrances. Using a close-ended questionnaire, appropriate multiple answers were selected. Evidently, 64 (32.0%) respondents in RVP (Kenya) expressed problems ranging from cost, to distance (38, 19%) and time (27; 13.5%). Other pressing problems include computer illiteracy (32; 16.0%), cultural taboos (23; 11.5%) and poor road networks (16; 8.0%).

Notably, survey results indicate that problems of access and exclusion also abound in RVP (Kenya), as an average of 43 (21.5%) respondents face problems that range from cost, to time and distance.

The P-Value for hindrances facing the use and availability of ICTs in the rural areas of Kenya reveals that the:

- P-Value of un-affordability is less than 0.05 (significant difference)
- P-Value of time is less than 0.05 (significant difference)
- P-Value of ICT services being too far away is less than 0.05 (significant difference)
- P-Value of computer illiteracy is greater than 0.05 (no significant difference)
- P-Value of poor roads is less than 0.05 (significant difference)
- P-Value of cultural taboos is less than 0.05 (significant difference)

From the above, this study can safely deduce that with the exception of computer illiteracy, there is a significant difference in hindrances faced in the use and availability of ICTs by rural women in South Africa and in Kenya. More specifically, there is a higher percentage of respondents in KZN (SA) who face hindrances that range from un-affordability, time, distance, poor roads and cultural taboos, when compared to respondents from RVP (Kenya).

7.9. Training needs for Kenya (n=200) and training needs for South Africa (n=200)

In table 19, respondents were expected to answer a question based on the "type of training they would require in order to assist them in accessing ICTs more often". In this question, the scale of 4 denoted a favourable response, i.e. very essential, followed by 3 (i.e. essential), 2 (i.e. quite essential), 1(not very essential) and a "not applicable" scale. By calculating the average for training needs under scales 4, 3 and 2, the study was able to arrive at conclusive remarks.

Survey results indicate that 19% of the respondents in KZN (S A) and 25.5% of the respondents in RVP (Kenya) felt that basic education was

essential. Similarly, while 26.5% have a need for basic education in KZN (SA), there was an average of 45.0% in RVP (Kenya) who also felt that they needed secondary education. Notably, 42.0% of the respondents in KZN (SA) and 45.5% of the respondents in RVP (Kenya) felt that adult education was essential. Interestingly, from all the enlisted training needs, computer/internet training scored highly, as 66.5% in KZN (SA) and 81.5% in RVP (Kenya) felt that this training would be essential. This was followed by 50.5% in KZN (SA) and 62.5% in RVP (Kenya) indicating that vocational training would be of foremost importance to them.

The P-Value on training needs for Kenya and South Africa illustrates that the:

- P-Value of basic primary education is greater than 0.05 (no significant difference)
- P-Value of secondary school education is less than 0.05 (significant difference)
- P-Value of computer/internet training is less than 0.05 (significant difference)
- P-Value of vocational training is less than 0.05 (significant difference)
- P-Value of adult education is greater than 0.05 (no significant difference)

With the exception of basic primary education and adult education, there is a significant difference in the training needs for Kenyan and South African rural women.

On the whole, results from both countries indicate that there is a definite need for the [internet/computer] training of rural women in order to assist them in accessing ICTs more often.

Table 19
Training needs for Kenya (n=200) and Training needs
for South Africa (n=200)

Training Needs	Very Essential (4)		Essential (3)		Quite Essential (2)		Not very Essential (1)		N/A		Average % (4+3+2)		P-Value
	SA	K	SA	K	SA	K	S	K	S	K	S	K	
	f	f	f	f	f	F	F	f	f	f	%	%	
Basic Primary Education	25	36	5	9	8	6	98	144	64	5	19.0	25.5	0.1189
Secondary School Education	50	47	-	14	3	29	100	105	47	5	26.5	45.0	0.0001
Computer /Internet Training	98	77	15	51	20	35	35	32	32	5	66.5	81.5	0.0007
Vocational Training	68	41	15	46	18	38	38	70	61	5	50.5	62.5	0.0159
Adult education	73	48	8	23	3	20	23	106	93	3	42.0	45.5	0.4809

7.10. Summary

This chapter has discussed the findings obtained through survey research and a structured questionnaire. The findings indicate that while there are more respondents between the ages of 13-20 residing in the rural areas of Kenya, there are more respondents between the ages of 21 - 30 residing in the rural areas of South Africa. Alternatively, there are a larger number of respondents over the age of 50 residing in the rural areas of South Africa than in Kenya.

In terms of education, the study indicates that there is no significant difference between the education levels of rural women in South Africa and Kenya. More specifically, while an average of about 34% have basic education in both Kenya and South Africa, well over 10% of the respondents in both the two nations, have no schooling at all.

The survey results indicate that with the exception of traders and preachers (in which percentages for Kenya are higher), there is a higher percentage of *housewives, farm workers, domestic workers, students, educators/teachers, entrepreneurs, clerical workers and community development workers* in South Africa than in Kenya. The study further illustrates that whereas Kenya has a fair share of farmers and nurses, South Africa has no records of either of these occupations amongst its rural respondents.

In terms of the ICTs most commonly used by rural women, an average of 74% of the respondents from both South Africa and Kenya use the radio as a medium of information access. An average of only 38% use the TV for their information needs. Whereas 10.2% of the respondents in KZN (SA) use the telephone, only 4% from RVP (Kenya) use the telephone. In both countries, the use of modern technologies such as the computer/internet is negligible.

Family, friends and neighbours form the bulk of alternative sources of information in both RVP (Kenya) and KZN (South Africa). Additionally, there is a higher use of alternative sources of information, such as newspapers, magazines, friends and neighbours, in rural KZN (SA) than in RVP (Kenya). However, community leaders, area leaders, trade fairs/exhibitions play a more significant role in RVP (Kenya) than in KZN (SA).

The survey revealed that a large number (57; 28.5%) of the respondents in KZN (SA) felt that ICTs were not only unavailable and inaccessible, but also difficult to use. 25 (12.5%) respondents felt that ICTs are costly and

unaffordable. Coincidentally, the number of those who found ICTs useful (20; 10%) and those who felt that ICT centres should be established near rural women (20; 10%) were similar. 9 (9.5.0%) respondents were of the opinion that ICTs were easily available and accessible, while 18 (9.0%) felt that ICTs are affordable. A few respondents attuned to problems with infrastructure, such as lack of power (13; 6.5%) and poor TV and radio networks (10; 5.0%).

In Kenya, a large number of respondents (63; 31.5%) indicated that ICTs were unaffordable, followed by 48 (24%) stating them unavailable and 28 (14%) inaccessible. On the use and availability of ICTs, the survey portrayed that 139 (69.5%) respondents felt that ICTs were too far, too costly or entirely unavailable. Only 16 (8%) respondents acknowledged the usefulness and availability of ICTS, citing that they were "handy" (2; 1%) or "improved access to information" (14; 7%).

This study indicated that respondents in both RVP (Kenya) and KZN (SA) feel that ICTs help them in accessing/receiving news items and keeping in touch with family and friends. There is however, a higher percentage of respondents in RVP (Kenya) than in KZN (SA) who feel that ICTs enhance their lives through entertainment, for research purposes and for distance education.

With the exception of computer illiteracy, there is a significant difference in hindrances faced by rural women in South Africa and in Kenya. More specifically, there is a higher percentage of respondents in KZN (SA) who face hindrances that range from un-affordability, time, distance, poor roads and cultural taboos than respondents from RVP (Kenya).

On the whole, results from both countries indicate that there is a definite need for the [internet/computer] training of rural women in order to assist them in accessing ICTs more often.

The next chapter (eight) presents an analysis of data from four case studies.

CHAPTER EIGHT

DATA PRESENTATION: CASE STUDIES

8.1 Introduction

The purpose of this chapter is to evaluate and portray four successful rural ICT development projects in Kenya and South Africa. These case studies are used as examples of ongoing ICT interventions that, to a large extent, involve rural women as target beneficiaries. Although the identified case studies are by no means the most ideal models for ICT interventions in rural development, they do confirm that with the right strategy in place, ICT accessibility and exploitation is feasible amidst poverty and underdevelopment, thus enabling the improvement of the welfare of a rural community.

This chapter presents data from key informants who consisted of program managers, a communications officer and project officers.

In Kenya, data was obtained from two informants, namely program managers (strategic management).

In South Africa, data was obtained from one communications officer and two project managers (middle management).

This chapter attempts to answer the following study objectives:

1. To audit and map ICT use amongst rural women in Kenya and South Africa.

The above objective is addressed under the following research questions:

(i) **Research Question:** What impact have ICTs had on rural women in South Africa and Kenya?

(a) **Interview Question:** What specific changes have you seen amongst rural women and the community at large since the introduction of ICTs?

(ii) **Research Question:** How can Kenya and South Africa share and contribute to the socio-political and economic experiences gained thus far?

(a) **Interview Question:** In what ways has your organization contributed to the social-economic development gained thus far?

(iii) **Research Question:** Which ICT resources do organisations that work with rural women use, and how do they implement them?

(a) **Interview Question:** Which ICT resources does your organization use and how do you implement them amongst rural women?

(b) How can NGO's that work with ICTs help rural women help themselves?

2. To analyse and determine the ICT training needs of rural women in Kenya and South Africa.

This objective is addressed under the following research questions:

(i) **Research Question:** How can the ICT training needs of rural women be addressed?

ii) **Interview Question:** How can the training needs of women be addressed, particularly in rural areas?

a) How can ICT initiatives be developed and applied, especially amongst women in rural areas?

b) Which factors are critical for the success of an organization that works with rural women and ICTs?

c) What are the key areas of activity that should receive constant and careful attention in projects that work with rural women and ICTs?

An interview schedule [see Appendix B (i)] sought information from organisations relating to: their backgrounds; ICT impacts; notable changes amongst rural women; socio-political and economic gains; how ICTs are accessed and used; how ICTs enhance lifestyles; training needs; how ICTs can be implemented amongst rural women; and critical success factors of organisations that work with ICTs and rural women.

8.2 Background of study areas

8.2.1 *AfriAfya Project, Aga Khan Field Centre – Mtaa Dispensary (Kenya)*

Mtaa Dispensary is a rural government dispensary situated in the Kinango Division of Kwale District. The road infrastructure leading to this dispensary is poor, with basic facilities such as running water, electricity and telephone lines in short supply. Mothers, and by extension women, have a strong cultural bearing and have to consult the husband or children's father whenever a hospital visitation is required.

Amidst the poverty, disease and ignorance afflicting rural and urban communities, there is hope. *AfriAfya*, a Kenyan NGO, has equipped women in rural areas with information that allows them to manage their everyday problems. *AfriAfya's* application of modern technology to disseminate/communicate health information has become a success story worth emulating. Computers, a printer and a World Space receiver have been installed in order to disseminate information on health, and power is made available via solar panels. Upon downloading the information, content

is repackaged in the local language — *Duruma*. With support from the Ministry of Health in Kenya and other partner agencies, such as the Aga Khan Health Services Kenya, African Medical Research Foundation (AMREF), Care Kenya, Christian Health Association of Kenya (CHAK), HealthNet Kenya, Plan International and the World Vision, *AfriAfya* now has 53 health facilities/centres in Kwale District alone. This has had a significant impact on health matters in the district, especially in tackling HIV/AIDS. According to Dr. Christopher Wood, the *AfriAfya* Board chairman (Jebet: 2003), "*we are what we know. Information plays a critical role in health and development*". In its efforts to empower the rural poor through ICTs, *AfriAfya* trains the rural community in computer skills such as accessing and packaging information for the community.

8.2.2 *ALIN-EA* Arid Lands Information Network – East Africa (ALIN-EA).

ALIN-EA (2006:1) describes the organisation as a non-profit, non-political NGO, which promotes the exchange of ideas and experiences between Community Development Workers (CDWs) in the Arid and Semi-arid Lands (ASALs) of Eastern Africa. The report further states that the network has a membership of over 1500 CDWs working hand-in-hand with marginalized grass-root communities in Kenya, Ethiopia, Uganda and Tanzania.

According to Ombok (2000:32), *ALIN-EA* has joined up with the digital broadcast pioneer World Space Foundation (WSF), USA, to get information to the remotest parts of Kenya using digital satellite broadcasting. Ombok explains that the World Space satellite network is an innovative communication technology that enables people to access information in remote villages where there are no telephone lines or electricity. It uses three geo-stationary satellites launched over Africa, Asia and America. Ombok adds that the satellite and digital technology enhances terrestrial radio, and information can now be availed to remote settlements via wireless

digital audio and multi-media technologies. Nairobi currently hosts the second largest World Space Uplink station in Africa, and also serves as the African regional headquarters.

8.2.3 *Women'snet*

Women'snet (2006:1-2) states that the organisation was launched in March 1998, as a joint initiative between the South African Non-Governmental Organization Network (SANGONet) and the Commission on Gender Equality (CGE). The report asserts that Women'snet contributes to gender equality and justice in South Africa through the use of ICTs. This is facilitated by training women, girls, and women's and gender organizations.

Women'snet South Africa is therefore a vibrant and innovative networking support programme designed to enable South African women to use the Internet and other relevant ICTs in order to find the people, issues, resources and tools necessary for women's social activism and empowerment.

8.2.4 *National Community Radio Foundation (NCRF)*

The NCRF (2006:1) records indicate that the organization was launched in December 1993 in Orlando, Soweto, as a non-profit organization. According to the report, the NCRF is a national, member-driven association of community radio stations and support service organizations. The NCRF has well over 80 member community radio station projects which are licensed and broadcast 24-hours/ 376 days a year on-air. The report states that the NCRF has service providers whose work contributes towards the development of radio stations through the provision of media training and content developing services.

8.3 Research Methodology

8.3.1 Sampling

As mentioned in chapter six under section 6.12.4, the desired representation from the NGO frame lists was provided by the South African Non-Governmental Organizations [Sangonet] (2006) and Europe's Forum on International Co-operation [EUFORIC] (2006). Through purposive sampling, four organizations were selected, i.e.:

- (i) Women's net
- (ii) National Community Radio Forum (NCRF)
- (iii) AfriAfya
- (iv) Arid lands information network – East Africa (ALIN-EA).

The purposeful sampling technique was deemed suitable given that there are well over 380 NGOs (Sangonet: 2006), few of which are interested in ICT issues as much as they are in other development issues (e.g. housing) (Sangonet, 2005).

Similarly, as with the case in South Africa, very few organizations are involved in ICT issues in Kenya, particularly those involving rural women.

The aforementioned sampling technique is described in the following stages:

8.3.2 Sample size

A sample size of four organisations (2 in Kenya and 2 in South Africa) was deemed sufficient for the study. This sample size was deemed adequate as *very few organisations are involved in ICT issues and application in Kenya and South Africa*. The key informants sampled for the study constituted women in strategic and middle management positions within organizations.

8.3.3 *Data collection techniques*

Data was collected using an open-ended interview schedule and a tape recorder. As key informants in both Kenya and South Africa understood English, the interviewer used the English language as the language of proficiency. *(Please refer to Appendix B (i) for example of interview schedule)*

8.3.4 *Data analysis and presentation*

In this study, open-ended responses and recorded interviews were analysed using content analysis methodology.

8.4 Case Study Findings

8.4.1 *Goals/mission of organizations*

The respondents were asked about the goal/mission of their respective organisations. The aim of this question was to gain a general understanding of the four organisations working with ICTs and rural women.

According to the NCRF respondent, the NCRF is a national, membership-driven association of community radio stations and support service organizations whose goal/mission is to encourage the active participation of diverse local communities in the development of programming activities for sustainable non-discriminatory local development.

While the AfriAfya respondent reported that the goal/mission of AfriAfya was to equip women in rural areas with adequate information that could assist them with their everyday problems, Women'snet respondents stated that

their organisation's goal\mission was to incorporate the use of ICTs in the development of women in South Africa.

Lastly, ALIN-EA's respondent reported that the mission of the network was to improve the development practices and livelihoods of communities in the arid areas of Eastern Africa by enhancing the capacity of community development workers (CDWs) to generate, access and share appropriate information.

8.4.2 Purpose of organizations

The respondents were asked to briefly explain what the purpose of their organization was. This question sought to clarify the rationale behind each of the four organizations and their accruing functions.

To this end, the NCRF respondent explained that the NCRF was established with the purpose of lobbying for the diversification of the airwaves in South Africa, and fostering a dynamic broadcasting environment in the country through the establishment of community radio stations.

According to the AfriAfya respondent, the purpose of AfriAfya is to improve the health standards of the rural community through the provision of repackaged information. While the purpose of ALIN-EA is to support Community Development Workers (CDWs) through the encouragement and exchange of ideas on development work, Women'snet respondents reported that their purpose was to enhance capacity building, and information creation and dissemination through electronic and print media.

8.4.3 Positions in the organizations

The respondents were asked to state the positions they held within their respective organisations. The aim of this question was to determine the respondents scope of management and the extent to which they influence

the daily activities of their organisations. While the respondent from the NCRF was a Communications Officer, the respondents from AfriAfya and ALIN-EA were both program managers. The respondents from Women'snet were both project officers.

8.4.4 *Contributions to the socio-economic development of rural African women*

The respondents (i.e. the National Community Radio Forum [NCRF], Women'snet, AfriAfya and Arid Lands Information Network – East Africa [ALIN-EA]) were asked to indicate ways in which their organizations have contributed towards the socio-economic gains of the rural women they work with. The aim of this question was to determine ways in which ICTs have improved the social and economic gains of rural women.

According to the NCRF respondent, "information is power". Therefore, the NCRF uses the radio to provide information, entertain and educate the community. The NCRF respondent further explained that the community radio gives this right to ordinary people who cannot be reached by national, commercial and private broadcasters, and that this has built "*an enabling environment and a coherent sector identity - ensuring the continued healthy growth of community radio in South Africa.*" The NCRF respondent further stated that the NCRF continues to create an enabling environment in the following ways:

- "Setting standards for the sector and monitoring implementation"
- "Providing information and advice to membership"
- "Representing the collective interests of members"

- "Creating structures and systems that encourage community radio stations to share experiences, skills, best practice models and resources."
- "Co-ordinating capacity building in the sector"
- "Lobbying and doing advocacy work to promote and protect the sector"
- "*Forging strategic alliances and partnerships with key stakeholders to facilitate delivery of services, resources, funding and support to both members and the sector*"

In ALIN-EA's case, the respondent explained that ALIN-EA has used Information and Communication Technologies (ICTs) to promote information exchange. According to the ALIN-EA respondent, the network was the pioneer in the use of world space satellite technologies in the region's dry lands, thus enabling those in marginalised areas to receive timely information on sustainable development, markets and *better livelihoods*.

In terms of ICT - based initiatives, the ALIN-EA respondent reiterated that these include the Open Knowledge Network (OKN), which is a forum for rural people to network and share ideas on development practices, sources of livelihoods and ways of life. The respondent further indicated that the OKN project offers the *poor contact with the outside world by catering for the exchange of knowledge through tailored ICTs, using special software like the 'open enrich'*. According to the ALIN-EA respondent, with the establishment of Community Access Points, rural communities use the software to generate and exchange local content through a bottom-up structure of knowledge sharing. The ALIN-EA respondent noted that *this project is implemented in Kenya and involves communities at Isiolo, Homa-Bay, Garissa, Magadi, Isinya, Marsabit, Nyahururu and Kyuso-Mwingi. In Tanzania, it involves communities at Shinyanga, Dodoma and Kayanga. Other partner organizations like Action Aid have also started OKN initiatives.*

In line with the types of ICTs used and how they are implemented amongst rural communities, the ALIN-EA respondent further listed the following:

(i) ALIN-EA uses a web-based practical guide for trainers, extension workers and farmers, namely: The Online information service for Non-chemical Pest Management in the Tropics (OISAT Info). The ALIN-EA respondent noted that OISAT Info is a practical guide that helps minimize pest damage in a safe, affordable, effective and ecologically-sound way and provides tips on lowering the cost of production based on recommended alternative pest, disease and weed control methods. He further explained that the OISAT concept (from-web-to-field-to-web) promotes the validation of local knowledge, and ALIN-EA, in collaboration with the ministry of Agriculture, piloted this project and involved farmers in Kyuso - Mwingi district.

(ii) The ALIN-EA respondent observed that the network has established a technical wing, Baobab Communications Ltd. (BAOCOM), which is a company that enhances access to ICTs by NGOs, schools and Community Based Organisations (CBOs). The company supports sustainable development and works to improve the supply chain for refurbished computers at affordable cost.

(iii) The ALIN-EA respondent further stated that the network has mobilized civil societies in ICT projects to form the Kenya Civil Society Caucus to the World Summit on Information Society in order to participate in developing Kenya's ICT policy. According to the respondent, ALIN-EA fundraised and trained members of the civil society on policy issues and organized a delegation to the World Summit on Information Society in Geneva and Tunis.

(iv) The network, in collaboration with other partner organisations, has placed ICT equipment in over 50 Community Information Centres (CICs) in the region. To this end, these centres feature World Space digital satellite

radio, data adaptor cards and computers, among other ICT-related equipment. Users are able to download web-based text and images via the satellite without phone lines, irrespective of their geographical location.

To ensure the continuity of these projects, the ALIN-EA respondent explained that the network trains community members at each of the *information centres in basic information technology skills and operating the equipment.*

On the whole, the ALIN-EA respondent noted that the network has impacted on rural development at various levels in the following ways:

- “Supported partner organizations in Kenya and Tanzania with volunteers for a period of one year. The volunteers build the capacities of the institutions on the documentation of community projects, information dissemination and management using appropriate ICTS”
- “Communities have benefited from ALIN-EA info products that include publications, CD-ROMs, videos, and capacity building on various development issues”
- “The CDWs working in rural areas have enhanced their ICT skills, can access ICTs easily and get updated and appropriate development information”

The AfriAfya respondent noted that the organisation has contributed to the socio-economic gains of the community by:

- “Providing information that is relevant and applicable to each unique individual”
- “Providing training/capacity building in the use of ICT equipment”
- “Providing equipment that was once perceived to be the reserve of the urban elite”

8.4.5 *Specific changes noted amongst the rural women/community since the introduction of ICTs.*

The respondents were asked to state the changes they had noted amongst rural women since the introduction of ICTs in their communities. The aim of this question was to determine whether, indeed, there is any impact stemming from ICT interventions in the community, and by extension, amongst rural women.

The National Community Radio Forum (NCRF) respondent stated that the NCRF has enabled ordinary communities, who had never had a communication platform, to use community radio in order to discuss challenges and forge positive solutions. According to the respondent, media penetration in South Africa is no longer a major problem because the development of community-owned media - like community radio - has allowed South Africans to exercise their freedom of expression through media.

The NCRF respondent further reported that women are now able to participate in the development of ICT projects. According to the respondent, "most volunteers at community radio stations are women". Furthermore, apart from the fact that there are a growing number of females in the governance and management structures of these stations, women are using community radio to debate and negotiate roles that have decision-making status in their communities.

The AfriAfya respondent contended that through the provision of health and development information to rural communities in Kenya, there has been an increase in access to ICTs in rural communities. As a result, there has been a reduction in the social effects of poverty, as people use information to better their lives. Over and above all this, there is an increase in general awareness with regard to health issues afflicting women and their families.

According to the AfriAfya respondent, "there is now more openness on issues such as HIV/AIDS. Previously, this was a taboo subject that was linked to witchcraft. However, with the introduction of educational sessions, discussions forums and video shows on sources of infection and ways of prevention, more women and youth are now asking for more Voluntary Counselling Centres and the use of condoms. As women leaders are now also computer literate, they can help in training other community members." The AfriAfya respondent further noted that rural women are now:

- "Better informed and can bring strong points in discussions."
- "Better empowered financially after using the information provided to initiate income generating activities."

The AfriAfya respondent pointed out that there is also:

- "Improved access to health facilities."
- "Improved health seeking behaviour."
- "Increased participation in development forums."
- "More self-confidence amongst women".

The AfriAfya respondent also noted that today women "feel equal to the urban elite since they have access to the same ICTs in the urban centres", and that the idling of the youth in market areas has been minimised as they have something to do in the rural computer centres.

In reference to Women'snet, the respondent noted that the organization has initiated a computer literacy project in Limpopo Province and is now working with high schools in the area. According to the respondent, Women'snet has also "helped women in the computer literacy projects to overcome technophobia". In addition to an audio based project in the Gauteng province, the Women'snet respondent added that aside from the fact that women in the computer literacy project are able to find employment by

working in partnership with Technology for Women in Business (TWIB), women in Polokwane are able to write business proposals.

8.4.6 ICT resources used and how information is accessed and disseminated

Respondents were asked which ICT resources they used and how they access and disseminate information amongst rural women. The aim of this question was to collect views on the processes involved, and to determine suitable ways in which information could be accessed and disseminated amongst rural women.

In response to the above, the AfriAfya respondent pinpointed seven processes in the information dissemination process.

(i) Accordingly, computers were first introduced in Kwale district rural community through the establishment of a local health management board.

(ii) Secondly, in collaboration with existing organizations working in the area, such as the Aga Khan Health Services and the Ministry of Health (Kenya), AfriAfya assisted in the establishment of a health information system framework, namely, the Dispensary Health Committee (DHC). According to the AfriAfya respondent, the DHC has not only facilitated a two-way information and communication process, but also helped with community empowerment by enabling effective and active participation in the management of communal health problems. The Committee plays an important role in the management of the local dispensary, as it consists of representatives selected from each village in Kwale district.

(iii) Thirdly, following the establishment of the DHC, training in basic computer skills is organized. The respondent underscored the importance of screening trainees, who in this case include representatives from each village in Kwale District. It is important to note here that although this is a

dispensary that is highly occasioned by women and children, the selection of trainees is a communal affair, involving both men and women.

(iv) Fourthly, information on diseases, and other health related problems encountered at the dispensary, is collected by members of the DHC from the community during visits and group discussion forums. Although this information is initially processed manually and recorded in paper files, it is later synthesized with the help of a computer by the DHC members and displayed on boards at the dispensary in the form of graphs, pictures, simple posters and leaflets. According to the AfriAfya respondent, the local community is educated and made aware of the existing diseases found in their respective regions and the patterns and trends of the diseases. The use of a computer to produce posters and simple leaflets, particularly in a local language, has enabled community mobilization and encouraged good turn outs for health activities e.g. Immunization.

(v) Fifthly, focus group discussions are then held with the women on topical issues. Through Rota organized and planned for by the DHC, the use of videos has given many more women an opportunity to learn more about the AIDS scourge and other diseases and preventive measures. Based on this information, education sessions on preventive measures, family planning, antenatal visits, immunizations and drug supply are organized accordingly. The AfriAfya respondent further noted that besides processing information, DHC members are able to translate information into their own local language (*Kiduruma*) for use by the community.

(vi) Sixthly, health information that is sent to the dispensary from the Hub situated in Nairobi is also downloaded by DHC members at the dispensary with the help of a World space receiver radio that is connected to a computer. Information downloaded and found useful is usually incorporated into health education messages. Some of this information is useful in forums such as schools and churches. These include educational sessions and discussion forums from which many women are now getting

information on diseases in their districts, the patterns and trends surrounding these diseases and how to prevent their onslaught.

(vii) Seventhly, with the help of audio-video presentations, and the use of computers in order to produce simple educational publications such as posters and leaflets, women are able to learn and understand issues better.

In terms of access, the dissemination of information, and the ICTs used, the ALIN/EA respondent stated that the network first sources information that is *specifically tailored to meet the needs of CDWs*. After formatting this information, the network up-links it to the satellite so that it reaches the CDWs in their different localities. According to the ALIN-EA respondent, the multimedia services involved include downloading internet-based text and images from a variety of information services linked to the WorldSpace satellite. At the receiving end, is a special radio connected to an adapter card or modem, which is then connected to a Pentium Computer. Additional connections to the radio include a detachable micro-dish receiver that is strategically placed outside a window.

In the case of Women'snet, the respondents disclosed that information is accessed and disseminated with the help of the computer and related services such as e-mail and the Internet, wireless technology such as the radio, satellite technology, and traditional media communication technology, such as videos.

Commensurate with the NCRF respondent, the radio is used to access and disseminate information, as it is a cheap medium that gives rural women access to information. According to the respondent, *unlike other electronic and print media, the radio does not interfere with a woman's line of activities*.

8.4.7 *How ICTs enhance rural women's social welfare and quality of life*

Respondents were asked to illustrate any notable changes they had observed amongst women since the introduction of ICTs in their lives. This question aimed to identify ways and means in which ICTs play a role in the social welfare and the quality of life of rural women.

At community level, the radio allows women to have ownership of the media. According to the NCRF respondent, media plays a big role in development, and those who can access and control it are able to contribute to local development. Women use community radio as a participatory media that enables social change and economic development.

The ALIN-EA respondent reported that through capacity building, women are able to access appropriate information and establish small businesses, access markets, and access information on health, particularly nutrition for children.

The Women'snet respondents reported that ICTs have facilitated access to information. Additionally, ICTS have enhanced social welfare standards in the following ways:

- "Overcoming technophobia"
- "Capacity building in basic computer skills"
- "Access to the job market"
- "Self confidence. After participation in conferences, most women are now more comfortable when talking about issues affecting their lives"

According to the AfriAfya respondent, besides the fact that women are now better informed in health related issues, women have learned skills that ease their work at home as home makers, e.g, harnessing clean water.

8.4.8 Training needs of rural women

The respondents were asked to state how the training needs of rural women should be addressed. This question sought to determine how best to transfer information with the help of ICTs to rural women.

The foremost need raised by all the respondents from the four organisations was the need for “a training needs assessment survey” prior to any training activity. This is important as it helps determine the “set of knowledge women need most”. More specifically AfriAfya, for instance, reiterated the need to ensure that:

- “Training is geared towards economic empowerment”
- “Training is relevant to the daily activities carried out by the woman”
- “Training is conducted within the community to enable women to do family duties in the evening”

It is important to stress here that apart from the NCRF (which referred the interviewer to Women’snet for more on-the-ground and practical examples), the above views were shared by ALIN-EA and Women’snet.

8.4.9 How ICT initiatives could be developed and implemented especially amongst women in rural areas

The respondents were asked to indicate how ICTs can be developed and applied amongst rural women. This question is crucial, as it helps shed more light on the how-to of ICT project initiation and implementation amongst

rural women. Apart from determining areas or activities that require constant attention, the question helped provide a clearer understanding of the critical success factors necessary for an organisation/s that works with ICTs and rural women.

The AfriAfya respondent stated that "women should be involved in deciding which ICTs will have benefits and be of benefit to their lives" and that, "ICTs must have direct and immediate benefit to the lives of the women". Clearly therefore, the interviewer deduces that for ICT initiatives to have any meaningful use amongst rural women, the needs of the women have to be taken into consideration from the onset of development. In other words, the target end-user and the ensuing felt needs have to be an important priority in the ICT project in question.

Correspondingly, the ALIN-EA respondent observed that there is a need for sensitization and training in the use of ICTS before project implementation. For this to be practical, the respondent underscored the need "to develop more resource centres with capacities to train communities on ICTs".

In tackling similar issues related to developing and implementing ICTs amongst rural women, the Women'snet respondent stressed the following approaches:

- "Projects have to work in collaboration with the rural women by being flexible in terms of their needs and requirements"
- "There is always a need for a feasibility study or needs assessment survey before project implementation"
- "The type of physical infrastructure has to be taken into consideration before project implementation"
- "Gender dynamics/demographics of the community must be taken into account before project implementation, i.e., percentage of women, age groups, occupations"

- "Continual support, such as trouble shooting over the telephone"
- "Frequent personal visits"

8.4.10 Factors that are critical to the success of an organization that works with rural women and ICTs

Respondents were asked to specify activities that are absolutely necessary for the success of an organisation that works with ICTs and rural women. This question sought to determine key performance areas, or for that matter, sustaining activities that an organization must perform in order to accomplish its mission.

In response to the above, the Afriafya respondent underscored the need to involve rural women in the process, right from the initiation of the project, in order to ascertain their feelings and ideas. Furthermore, the respondent noted that *organizations must be able to ensure that the activities are not only of interest and importance to the women, but also set according to the pace of the women involved, and not the organization's.*

While the ALIN-EA respondent underscored the importance of identifying women with interest in ICTs and bringing these tools closer to the women, the Women'snet respondent maintained that the volatility of the environment, such as the availability of electricity and the physical infrastructure, is an important consideration in ICT project implementation.

8.4.11 Key areas of activity that should receive constant and careful attention in projects that work with rural women and ICTs

In this question, respondents were required to shed more light on areas in which careful attention must always be given in-order to ensure the success of a project.

To this end, the AfriAfya respondent underscored the need for not only 'refresher' training in the use of modern ICTs, but also "updates on the new technologies and their benefits to the rural communities, especially women". During the interview, the question of "economic empowerment" was emphasised, as arguably "most rural women are breadwinners for their families". According to the AfriAfya respondent, the ICTs in question must therefore be seen to improve the economic mainstay of the women, in addition to other issues such as "keeping in touch with family and friends".

Alternatively, the ALIN-EA respondent stressed the importance of "a good tailor made training programme that suits local situations" and also "awareness creation and mobilization of the women" as key areas of activity.

Of particular interest to the interviewer was that views and opinions raised by the respondents were similar in most cases. For instance, the Women'snet respondent highlighted the importance of awareness creation "through available media resources, and to the intent of the project way in advance". The need to familiarise the target end-users with the objectives of the organisation was also stressed. Aside from the fact that there is a need to "ensure that there is sufficient physical and information infrastructure", the Women'snet respondent also opined that projects should be "sensitive to gender dynamics, for instance, projects should be flexible to the times women can avail themselves for training".

8.4.12 How NGO's can help women help themselves

The respondents were asked how NGO's can help women help themselves. This question aimed to draw opinions from the respondents on how best to assist women in ICTs and rural development.

The NCRF respondent noted the need for local governments to give women a platform that would enable them to participate in and be part of the decisions taken in their lives. Over and above, civil society organizations should become lobbying platforms for social change.

The AfriAfya respondent opined that women should be given "correct/accurate information" on issues that affect their lives. The respondent added that rural women should be exposed, through the use of ICTs, to what other women are doing worldwide. By the same token, the respondent stressed the need for "capacity building" in order to enable women to handle daily challenges. The AfriAfya respondent further noted that local governments could help women help themselves particularly through the provision of seed funds when initiating projects.

In conforming to the above, the ALIN-EA respondent also stressed the need for capacity building amongst women and the need to "*link rural women to micro finance institutions*" as crucial factors.

According to the respondents from Women'snet, NGO's have to try and present themselves to women in rural areas by extending their services to these women.

8.5 Summary

This chapter presented the findings obtained from the key informants of the study, who included project officers, a programmes manager and a communications officer. They were drawn from four organisations (two in South Africa and two in Kenya). The findings indicate that media penetration in the rural areas of South Africa has improved, as community owned radio has allowed South Africans to exercise their freedom of expression and to participate in the development of ICT projects.

Additionally, aside from the fact that women in computer literacy projects are better placed to find employment, basic computer literacy is also being promoted.

Through networks like ALIN-EA, the use of World Space Satellite Technologies has been pioneered. This has enabled rural communities in marginalised areas to receive timely information on sustainable development and market information.

On the whole, the study observes that ICT organisations that work in/with rural areas have had a positive impact on rural development. For instance, ALIN-EA has impacted on rural development at various levels and in the following ways:

- “Supported partner organizations in Kenya and Tanzania with volunteers for a period of one year. The volunteers build the capacities of the institutions on the documentation of community projects, information dissemination and management using appropriate ICTS”
- “Communities have benefited from ALIN-EA info products that include publications, CD-ROMs, videos, and capacity building on various development issues”
- “The CDWs working in rural areas have enhanced their ICT skills, access ICTs easily and get updated and appropriate development information”

One of the foremost needs raised by all the respondents was the need for “a training needs assessment survey” prior to any training activity. This is crucial as it helps to determine the “set of knowledge women need most”. More specifically AfriAfya, for instance, reiterated the need to ensure that

training is geared towards economic empowerment, is relevant to the daily activities of women, and is conducted within the community to enable women to partake in family chores.

In terms of critical factors, the respondents underscored the need to involve rural women in the process, right from the initiation of the project, in order to ascertain their feelings and ideas. Added to this, organizations must be able to ensure that activities are not only of interest and importance to the women, but are also set at the pace of the women involved, and not the organization's.

The next chapter (nine) discusses the findings of the study.

CHAPTER NINE

DISCUSSION OF FINDINGS

9.1 Introduction

This chapter discusses the findings obtained through five sets of data collection techniques, namely: the survey method, a structured questionnaire, an interview schedule, case studies and document review. Two techniques were used to obtain information from the respondents. The first was a structured questionnaire used to solicit information from rural women, while the second was an interview schedule used to obtain information from the key informants of the study. These two schedules were supplemented by document review. An attempt has been made to collate the findings obtained from these techniques and draw a correlation with the objectives of the study. Hence the discussion includes the: characteristics of the South African and Kenyan respondents; ICT resources used by rural women; use and availability of ICTs in the rural areas of KZN (South Africa) and Rift Valley Province (Kenya); ICTs and the enhancement of rural women's economic and social welfare standards; ICT hindrances faced by rural women; training needs of rural women; and critical success factors of organisations working with ICTs and rural women.

9.2 Characteristics of the South African and Kenyan respondents

While an average of 128 (64%) respondents in rural KZN (SA) were aged between 13-40 years, an average of 72 (36%) were over 41 years of age.

In Kenya, an average of 152 (76%) respondents were between 13-40 years, while an average of 48 (24%) were over 41 years of age.

Survey results relating to levels of education indicated that an average of 177 (88.5%) respondents in rural KZN had acquired some level/s of

education (i.e. primary, secondary or tertiary education) while 23 (11.5%) had no schooling at all.

In rural RVP (Kenya), survey results indicated that an average of 170 (85%) respondents had acquired some level/s of education (i.e. have primary, secondary or tertiary education), while 30 (15%) had no schooling at all.

Most of the respondents in South Africa were small-scale traders (29%) followed by those who work as housewives/homemakers (24.0%), farm employees (12.5%), and domestic workers (18; 9.0%). Only 8% of the respondents in rural KZN were educators/teachers. Notably, there were no farmers and nurses amongst the respondents in rural South Africa.

Survey results in Kenya also indicated that most of the rural respondents in RVP (Kenya) are traders (34%), followed by housewives (14.5%), teachers (13.5%), and farmers (13.0%)

9.3 ICT resources used by rural women

As was noted in chapter 7.3 on the ICT resources used by rural women, the use of "old" technologies, such as radio and TV, is high in all sectors of South Africa. These two ICTs are extensively used, which is in stark contrast to the paltry use of modern technologies such as the computer/Internet. The use of the radio alone scored an average of 73.4%, while the use of the TV averaged 39.2% amongst the rural respondents. Compared to the 10.2% who used the landline telephone, the mobile phone scored reasonably well, as 15.0% used it for their information needs.

These views are supported by Ranchod (2001), who observes that 80% of South Africans listen to the radio primarily because it is free, does not need electricity, a telephone line or literacy to ensure access. According to

Ranchod, this has enabled women to communicate in local languages and listen to local programs. Similarly, in support of the low use of modern technologies such as the computer/internet, Emdom in Parkinson (2005:46) argues that high cost, and to a lesser degree, the low quality of internet connectivity, are factors that have severely limited or blocked efforts to offer the internet to rural schools and rural communities in South Africa.

Evidently, the versatility of cell-phones transcends poverty and geographical boundaries. This view is echoed by authors such as Batchelor, Scott and Taylor (2005:9), who underscore the importance of the mobile phone, arguing that villagers are willing to pay up to \$1 per minute to make essential calls. This is because cellular technology provides access to crop prices, market information, and currency rates, in addition to other factors. The EC (2001) further adds that telecomm demands are highly price-elastic, and observably, the usage level of mobile phones throughout all sectors of the population, including the poor, increases very rapidly once prices are brought down.

In Kenya, the prevalence of old technologies (i.e. radio and TV) was also high in all sectors. Survey findings indicated that the radio alone scored an average of 74.4%, while the TV averaged 37.8%. This is in stark contrast to modern technologies such as the computer/internet, which scored an insignificant 1.0%. The mobile phone (12.8%) scored considerably well against the telephone, which garnered only 4.0% of the respondents.

As noted in chapter 2.2.5 on "old" technologies in Kenya, an estimated 60% of the population (i.e. both urban and rural) has access to television, and 90% has access to radio services (MoIC, 2006:1).

In a situation similar to one found in South Africa, it is prudent to argue that the mobile phone in Kenya has an advantage over the telephone, as the findings indicated that it is used up to three times more by respondents. On

average, the use of the mobile phone is proving handy, especially amongst the poor and disadvantaged in Kenya. In this respect, it is safe to deduce that these mobile initiatives are successful as they provide links between ICTs and sustainable livelihoods in activities such as agriculture, pastoralism, entrepreneurship and information regarding employment. According to Wainaina (2005:25-28), the use of mobile phone text messaging for the provision of market prices, employment vacancy alerts, and local news to disadvantaged communities and slum dwellers invaluable contributes toward poverty reduction. As illustrated in chapter 5.5.1, examples include SokoniSMS, which empowers farmers through an SMS market price service launched by the Kenyan Agricultural Commodity Exchange (KACE) in 1997, *Simu ya Jamii* [family phones] Community Phone services, which are small scale businesses that run mobile telephone kiosks with the help of Safaricom limited and other local micro-finance organizations, and the CommunityNews Service (situated in the heart of slum dwellers), which sends regular messages relating to health, sanitation, business advice and scholarship opportunities to over 3,000 residents in Kenya's largest informal settlement (i.e. Kibera).

For the most part, the success of these cell-phone initiatives can also be attributed to their ability to simplify the provision of services and also promote economic activity (The Panos Institute, 2004:1-4).

9.4 Uses and availability of ICTs in the rural areas of KZN (South Africa) Rift Valley (Kenya)

The study portrayed that a significant number (82; 41.0%) of the respondents in rural KZN (SA) felt that ICTs were not only unavailable and inaccessible to them, but also difficult to use. Similarly, an average, of 139 (69.5%) respondents in rural RVP (Kenya) felt that ICTs were too far, too

costly or entirely unavailable. Evidently, there was a larger percentage of rural respondents (70%) in RVP (Kenya) who felt that ICTs were inaccessible.

This poor state of ICT affairs, especially in Kenya, is echoed in opinions by Harris (2004:35) in chapter 4.0 [which provides the theoretical framework of the study]. Harris states that the effective application of ICTs must comprise sound technological and physical/information infrastructure. According to Harris, even when such infrastructure is in place, difficulties arise when the said infrastructure is too costly to use, too far to access and/or poorly maintained. As illustrated by IDRC (2005:2) in chapter 2.2.4.1, the ICT landscape in Kenya is still wanting, an aspect that has resulted in the limited use of ICTs for economic and social development. The report further notes that in the rural regions of Kenya, only one in a thousand households has a telephone line. This ties in with results from the survey in Table 4, which indicated that a meagre 4% of the rural respondents in RVP (Kenya) use the telephone for their information needs. This low percentage points not only to the telephone's inaccessibility, but also to its unavailability. Over and above this limitation, Waema (2006:1) laments the fact that Kenya has battled for the past 15 years or so to put a comprehensive National ICT policy in place. Although Kenya can today claim to have a National ICT policy (Ministry of Information and Communications-Kenya, 2006), this policy has not been enacted into an act of parliament.

Section 2.3.2 on National information policy in South Africa illustrates that the Government of South Africa (GSA) has placed a strong emphasis on ICT sector development through the implementation of a National ICT strategy, particularly for disadvantaged segments of the population. These include the 1995 Green Paper on Telecommunications Policy and the 1996 White Paper on Telecommunications Policy, which formed the basis for the 1996 Telecommunications Act, and other initiatives like the Info.com 2025, which

addresses issues of policy infrastructure. In spite of all these efforts in ICT policy formulation, empirical results in the use of modern ICTs, such as the computer/Internet, by rural women in KZN (South Africa), indicate a low prevalence rate. Other authors: such as Snyman and Snyman (2003) on getting information to disadvantaged communities; Gillward et al. (2005) on e-indexing in South Africa; and Parkinson (2005) on Telecenters in South Africa; display a certain degree of discontentment regarding the development and management of ICT related issues in South Africa. As illustrated in chapter 2.3.3, Parkinson (2005:34) argues that the act has overlaps, while Audenhove (2003: 6) contends that South Africa still lacks an integrated National ICT Policy as "different departments drive policy processes". By the same token, Snyman and Snyman (2003:10) argue "that although MPCCs form the back bone of development communication and the dissemination of information to needy communities..... they lack effective management, well-maintained and working equipment, relevant information as well as the much advocated access to the internet gateway".

Additionally, Research ICT Africa (2005) denotes that the telecommunications sector in South Africa is characterized by relatively high retail prices, super profits, job losses, licensing delays and deadlocks with minimal new foreign investments.

The above sentiments evidently raise some concerns as to the efficiency and effectiveness of the current National ICT Policy in South Africa, particularly in its implementation strategies.

Nevertheless, according to the Mail&Guardian (2007), South Africa's Second National Operator (SNO) was given the go ahead sign. Neotel was finally launched in August 2006 and will now offer fixed-line and other telecoms

services, such as voice-over internet protocol. Although Telkom's fixed-line monopoly officially ended in 2002, it is hoped that the granting of the licence will bring some competition into the industry.

9.5 ICTs and the enhancement of rural women's economic and social welfare standards

Survey findings indicated that an average of 91.5% of the respondents in both rural KZN (South Africa) and rural RVP (Kenya) felt that ICTs (particularly the radio and TV) play a major role in helping women keep abreast of current events within and beyond their borders. This was followed closely by the need to keep in touch with family and friends (81.0% in South Africa and 87.0% in Kenya). To most respondents, the mobile phone was particularly useful in the latter. As mentioned earlier in chapter 7.3 under types of ICTs used, the cell-phone has a clear advantage over the telephone, as 15% of the respondents use it, compared to 10.2% who use the telephone in South Africa, while in Kenya, the cell-phone has a comparative advantage over the telephone as it is used by 12.8% of the respondents. The latter is used by only 4.0%.

Other social factors cited as important by the respondents include the ability to listen to music and other entertaining programs. With the help of ICTs, this service recorded the highest result overall, with 94.0% for Kenya and 71.5% for South Africa.

Evidently, the radio plays a crucial role in enhancing the social and welfare standards of marginalised rural woman. This ability by the radio to enhance the quality of life of rural women is shared by Iiboudo (2003:206-208) who affirms that the radio has the capacity to enable the broad participation of men and women within a local community. This is because it is cheap and

can be used to disseminate information in a variety of languages and in geographically distant or restricted areas.

Although the use of the fax machine (44%) stood out as an important activity, particularly in South Africa, it scored dismally in Kenya (16.0%). Furthermore, not many rural women use ICTs for activities such as data processing and e-commerce. E-commerce scored a low average of 20.5% in rural KZN (SA) and 17.0% in rural RVP (Kenya), and data processing garnered 29.0% in rural KZN (SA) and 23.0% in rural RVP (Kenya). As pointed out in Chapter 5.8.1 on empowering women, Marcelle (2002:3) argues that advanced applications such as e-commerce can only be supported by appropriate infrastructure and sound supporting policies. According to Marcelle, 85% of the world's commerce websites are US-based, and not many people possess visa cards. Hafkin and Taggart (2001:1), in chapter 5.2, also argue that women are unable to benefit from the knowledge economy as they lack scientific and technical education.

The NCRF also uses the radio to provide information, entertain and educate the community. The Community radio, which was initiated in 1993 in Orlando, Soweto, by the NCRF has built "*an enabling environment and a coherent sector identity - ensuring continued healthy growth of community radio in South Africa.*" Worth noting here is that with the exception of the NCRF (which mainly uses the community radio), the type of ICTs used by organisations such as AfriAfya, ALIN-EA and Women'sNet, move beyond the scope of the radio. Modern technologies like the computer/Internet and satellite are also used in a bid to promote information exchange. For instance, ALIN-EA was the pioneer in the use of world space satellite technologies in the East African region, thus enabling communities in marginalised areas such as Isiolo, Homa-Bay, Garissa, Magadi, Isinya, Marsabit, Nyahururu and Kyuso-Mwingi in Kenya, and communities in Shinyanga, Dodoma and Kayanga in Tanzania to receive timely information on sustainable development, markets and better livelihoods. By working in

collaboration with other partner organisations, the network has placed ICT equipment in over 50 Community Information Centres (CICs) in the region, featuring World Space digital satellite radio, data adaptor cards and computers, among other ICT-related equipment. Users are subsequently able to download web-based text and images from the satellite without the use of phone lines, irrespective of their geographic location

Both AfriAfya and Women'snet have contributed to the socio-economic gains of the community through the provision of relevant information, the capacity building of the community in terms of the use of ICTs, and through creating access to ICTs. Aside from the fact that rural women are now better informed, those who participate overcome technophobia, have better access to the job market, and learn skills that ease their work at home as home makers (e.g. harnessing clean water).

9.6 ICT hindrances faced by rural women

As illustrated in chapter 7.7 and 7.8 under ICT hindrances, rural respondents in KZN (South Africa) felt that cost (113; 56.5%), time (93; 46.5%) and computer illiteracy (42; 21.0%) were in the list of major hindrances facing them. In Kenya, major hindrances similarly included cost (64; 32.0%), distance (38; 19%), computer illiteracy (32; 16%), and time (27; 13.5%). The use of the computer/internet accounted for an average of only 5.4% of the respondents in rural KZN (South Africa) and a negligible 1.0% in rural RVP (Kenya).

Clearly, problems of access and exclusion are still apparent, particularly with regard to the use of computers and the internet in both countries. These views are confirmed by Marker, Wallace and McNamara (2002:12), who argue that poor infrastructure, the unreliability of ICTs and high costs are major hindrances facing ICT development in developing countries. It has also

been noted that problems of access and exclusion in rural areas are compounded by an insufficient assessment of local conditions. For instance, authors such as Ballantyne, Labelle, and Rudgard (2000:2), argue that the use of the Internet is constrained in developing countries by the low provision of appropriate content, both in terms of language and subject matter. By the same token, Bridges.org (2001), denote that "real access" to technology is one of the key elements necessary for integrating technology into society. In other words, is the technology in question available, physically accessible and affordable?

As previously mentioned, most rural women are still educationally disadvantaged, a fact supported by the survey results, which illustrate that 31% [of the respondents] in rural KZN (South Africa) and 35.5% in rural RVP (Kenya) had obtained primary education alone. This is in addition to the fact that 42 (21%) respondents in South Africa and 32 (16%) respondents in rural RVP (Kenya) identified computer illiteracy as an impeding factor to accessing ICTs. Other impeding factors as cited by the respondents in South Africa, though insignificant, revealed a general feeling of apathy, and include lack of electrical power (13; 6.5%), untrustworthiness (8; 4.0%) and poor TV and radio networks (10; 5.0%). Other hindrances to ICT access in rural RVP (Kenya) include cultural taboos (23; 11.5%) and poor road networks (16; 8.0%).

In order to create a demand-driven ICT consumer community in the rural areas, hindrances to accessibility must be significantly reduced either before or during the provision of the technology. This necessitates training and skills enhancement initiatives amongst other participatory development programs, such as focus group discussions, direct interviews and workshops (Bessette, 2004; Harris 2004:39). In support of the above, authors such as: Ballantyne, Labelle and Rudgard (2000) on information and knowledge management; UNDP (2001) on ICT challenges; the World Bank (2002) on

expanding telecommunications networks; and Odame (2005) on gender and ICTs; also argue that the use of ICTs is limited by lack of awareness and skills training, and a shortage of capital resources required to purchase and maintain equipment. As an added initiative, the development of professionals and teachers as viable intermediaries for bridging the digital divide experienced by low-literate or illiterate youth in school education programs in rural areas, can also be enhanced (Wagner, 2005).

Illustrations from case studies in chapter 8.4.6 on how information is accessed and disseminated by AfriAfya indicate that with the right strategies in place, ICT initiatives amongst the poor can be feasible. The success story behind Afriafya denotes that all is not lost, particularly amongst the poor and marginalised communities. As illustrated in chapter 5.4.1 on mobiles and poverty reduction, other success stories include the Bangladesh mobile help line for women, better known as Pallitathya, and Grameen Telecom. Grameen Telecom (2005) is an NGO set up by Professor Muhammed Yunus, who had a vision of providing telecommunication services to the 100 million rural inhabitants of the 68,000 villages in Bangladesh.

9.7 Training needs of rural women

Survey results indicate that computer/internet education is highly favoured amongst the respondents, as 66.5% in KZN (SA) and 81.5% in RVP (Kenya) felt that this training would be essential. This was followed by 50.5% in KZN (SA) and 62.5% in RVP (Kenya) indicating that vocational training would be of foremost importance to them.

Notably, 42.0% of the respondents in KZN (SA) and 45.5% in RVP (Kenya) felt that adult education would also help them with their communication skills. These views are shared by organisations such as ALIN – EA (chapter eight) who underscored the need to not only sensitise the communities prior to ICT project implementation, but also “to develop more resource centres

with capacities to train communities on ICTs". These views are also shared by the World Bank (2002:5), who state that training is necessary as learning is rendered more effective through both practical application, and innovative and interactive training. Training also assists with the empowerment of women.

AfriAfya, Women'snet and ALIN-EA all reiterated the need to conduct "a needs assessment survey" before any training activity is implemented. According to AfriAfya, a needs survey helps to determine the "set of knowledge women need most". AfriAfya further stressed the importance of ensuring that training is geared towards economic empowerment, is relevant to the occupations of the women concerned, and is conducted within the women's vicinity.

These training issues confirm views held by Solange and Momo (2005:6) in Chapter 5, who underscore the need for an area study that would enable the collection of socio-economic data and the identification of information requirements (education, family planning, legal matters, etc). For example, the empirical findings of this study indicated that 58 (29.0%) of the rural women in KZN (South Africa) were small-scale traders, followed by housewives/homemakers (48; 24.0%). Given that information needs are determined by the role demands or occupation of a user (Odongo and Ocholla, 2004:58; Krikelas, 1983: 10), this necessitates training the women on where, how, and when to access information relevant to their situations and needs.

Training also raises the important question of empowerment. Once again, it is important to stress here that by virtue of the fact that most rural populations comprise of women, the implication is that women are an important part of rural development programs. (Solange and Momo, 2005). According to Grown et al. (2005:33-34), empowerment implies equal standards in education and health, and also equal access to resources such

as land and employment. Of interest here, is that while an average of 56.5% of the rural respondents in both South Africa and Kenya expressed the need for vocational training, an average of 43.8% felt they needed adult education. It might help to add here that both these training activities would be a worthwhile consideration for community information centres, particularly for those based in rural areas.

9.8 Critical success factors of organisations that work with ICTs and rural women.

Case study findings underscore the importance of the following critical factors and areas of activity which would have to be taken into consideration if ICT projects are to have any meaningful effect on rural women in development:

- 1) Involving women in deciding which ICTs would add direct and immediate benefit to their lives.
- 2) *Sensitizing and training communities with regard to the use of ICTs before project implementation.*
- 3) Developing more resource centres with the capacity to train communities about ICTs.
- 4) Performing a feasibility study or needs assessment survey before *project implementation.*
- 5) Assessing the gender dynamics/demographics of the community before project implementation, e.g. percentage of women, age groups, occupations etc.
- 6) Ensuring continuous support, such as trouble shooting over the telephone.
- 7) Ensuring frequent personal visits.
- 8) Setting activities at the pace of the women involved and not the organization's.

- 9) Identifying women with an interest in ICTs, and bringing these tools nearer to the women.
- 10) The need to economically empower women as most rural women are breadwinners.
- 11) Creating advanced awareness of the project and its intentions through available media resources.
- 12) The need for civil society organizations to become lobbying platforms for social change.
- 13) The need to expose and connect women through the use of ICTs to what other women are doing worldwide.
- 14) Linking rural women to micro finance institutions as a motivating factor.

The above mentioned factors have many similarities with views raised by Harris (2004) in chapter 4 on info mobilisation.

In his paper on the *Missing Link - Information*, Kenney (1995) contends that the socio-economic independence of developing nations must be a long-term goal. However, the author goes on to caution that this goal cannot be realized if the population suffers from inadequate levels of health and education, if the environment is unhealthy, if the political system prevents the populace from exercising their rights, and if the creation of wealth is insufficient. Concurring with this argument is the fact that health and education in poor nations are related and lacking due to the lack of relevant information. According to Kenney (1995), the compensation and electronic delivery of information and knowledge that would enable the treatment and diagnosis of isolated patients, and the education and training of development workers, would go a long way in uplifting the socio-economic standards of the rural poor. Correspondingly, the need to integrate women in all aspects of national development programs is paramount if Africans are to ensure rural development (Adedeji, Rasheed, Morrison, 1990: 162). This would include programs such as food production, firewood collection, water fetching, employment opportunities, education and training, housing, health, nutrition, agriculture and political empowerment,

amongst others. A study by Huyer (1997), notes that the colonial and postcolonial focus on the cash economy marginalized women, whose triple roles in reproduction, subsistence production and community management, is not valued quantitatively or economically. While women remain the providers of 60 to 80 per cent of the household food in many parts of sub-Saharan Africa, it is regrettable that development programs have failed to recognize this fact (Adedeji, Rasheed, Morrison, 1990).

As clearly illustrated in chapter 4, in his theory on *"info mobilisation"*, Harris (2003:8-9) is emphatic that ICTs can only have optimal impacts in rural communities if they are imbedded within processes such as: "familiarizing communities with their existing use and sources of information as well as with existing gaps; alerting communities to the potential application of information to their problem solving efforts; sensitizing communities to the existence and accessibility of abundant information resources and to the capabilities of ICTs for accessing and manipulating information; propelling communities towards the acquisition of the new knowledge they will require in-order to exploit the power of ICTs; empowering communities with information literacy, the skills necessary for the mastery of new media, the internet and multimedia; encouraging the collection, classification, preservation and dissemination of indigenous knowledge and cultural information artifacts; and fostering appropriate local mechanisms for sustaining the equipment, services and operations of community based ICTs". Additionally, the use of participatory mechanisms for community engagement, are invaluable. According to the author, household surveys, community focus groups, orientation sessions and demonstrations, all have a part in empowering communities. This idea surrounding alternative media resources and sources of information, such as women groups, folk media, religious gatherings, exhibitions, extension services and discussion forums, is also supported by earlier studies conducted by Ngimwa, Ocholla and Ojiambo, (1997) and Mooko (2002 : 110).

A closer look at the success behind both AfriAfya and ALIN-EA reveals some of these processes: the establishment of a District Health Committee (DHC) and Community Development Workers (CDWs) are in both case studies fundamental in a two-way information communication process; collaborative efforts involving other organizations working with the community, such as the Aga Khan Foundation (in the case of *AfriAfya*) are equally important; incorporating other social factors, such as the language commonly used; the use of traditional modes of communication, such as discussions held with the women groups, along with the use of other media technologies such as videos; and skills enhancement through the training of community leaders, which would have a multiplier effect in the long run. All these efforts and processes have been used to some degree by both organizations, in a bid to harness and disseminate information with the help of ICTs in rural development.

9.9 Summary

This chapter has discussed the findings obtained from the survey method, a structured questionnaire, an interview schedule, case studies and document review.

The study's findings regarding occupations indicate that well over 50% of the rural women in both South Africa and Kenya are small-scale traders.

In terms of the types of ICTs used, "old" technologies, such as radio and TV, are highly prevalent in all sectors of South Africa and Kenya. These technologies play a major role in helping women keep on top of current events within and beyond their borders. The versatility of the cell-phone transcends poverty and geographical boundaries. Overall, well over 50% of the rural women felt that ICTs were not only unavailable and inaccessible to them, but also difficult to use.

Problems of access and exclusion are still readily apparent, particularly with regard to the use of computers and the internet, which accounted for an average of only 5.4% of the respondents in rural KZN (South Africa) and a negligible 1.0% in rural RVP (Kenya). There is a compelling need to enact policies that take into consideration the socio-economic factors facing marginalised communities, such as cost, poor infrastructure, capacity building, etc.

Survey results indicated that computer/internet education is highly favoured by the respondents, as 66.5% in KZN (SA) and 81.5% in RVP (Kenya) thought it necessary. Worth noting is that the case study findings, together with the document review, helped to portray that with the appropriate information transfer models in place, ICTs are feasible amongst marginalized populations.

The next chapter (ten) summarizes the findings and presents the conclusions and recommendations.

CHAPTER TEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

10.1 Introduction

The purpose of this chapter is to summarize the research findings, to propose recommendations that may, in future, be used when implementing ICTs for rural development amongst rural women, and to suggest items for further research. The chapter is divided into an introduction, summary, conclusion and recommendations.

The research objectives were to:

1. Explore, analyze and compare ICT development, policies and strategies in Kenya and South Africa.
2. Audit and map ICT use amongst rural women in Kenya and South Africa.
3. Identify the ICT information needs and e-services of rural women in areas such as health, education, agriculture, social welfare, entertainment, commerce and industry, in both Kenya and South Africa.
4. Identify barriers faced by women when accessing and using ICTs.
5. Analyze and determine the ICT training needs of rural women in Kenya and South Africa.
6. Develop and propose a model for ICT development and application for rural women in Kenya.

10.2 Summary of the findings

The findings of the study are summarized according to the respective research objectives and research questions.

10.2.1 To explore, analyze and compare ICT development, policies and strategies in Kenya and South Africa.

- Which national policies and strategies on ICT are in place in Kenya and South Africa?
- How are national policies and strategies on ICT implemented in Kenya and South Africa?
- Which national policies and strategies are needed to help develop ICT resources and infrastructures for rural development and rural women?
- How should national ICT policies and strategies that promote gender equity and use of resources be implemented?
- How can local governments help women, help themselves?

In Kenya, BMI Techknowledge (1995:63) reports that the break-up of the East African Community (the parent of the once East African Post and Telecommunications Corporations), was followed soon after by an act of parliament which established the Kenya Post and Telecommunications Corporation (KPTC) in 1977. Up until 1998, the telecommunications sector in Kenya was dominated by this giant state corporation, after which it was split by the Kenya Communications Act of 1998, which divided it into four separate components, namely:

- Telkom Kenya (Telephony and Telecommunications)
- Kenya Postal (Postal Services)
- Communications Commission of Kenya (Licensing and Regulation)
- National Communications Secretariat (Policy Formulation and Advice)

Equally, and as noted by Waema (2006:1), Kenya has a draft National ICT Policy. This policy covers information technology, telecommunications, post, broadcasting and the radio spectrum. It has, however, been observed that the policy has still not been enacted into an act of Parliament.

The South Africa yearbook (2005/06:36) contends that the department of Communications is at the forefront of government initiatives to bridge the digital divide and provide universal access to ICT for all South Africans.

To this end, the GSA's Department of communication began the process of developing legislation in the telecommunications sector in 1995 and 1996. The 1995 Green Paper on Telecommunications Policy and the 1996 White Paper on Telecommunications Policy formed the basis for the 1996 Telecommunications Act.

Notably, national policies and strategies on ICT in South Africa are implemented by a cross section of government departments/institutions that range from Arts and Culture; Science and Technology; Trade and Industry; Communications; Education; and the Presidents office. Once again, according to Audenhove (2003:148), what appears to be lacking in South Africa is a central institution that can steer initiatives and coordinate policy.

In South Africa, national policy development since 1998/99, has sought to restructure state owned enterprises (SOE's) such as Telkom, introduce competition, accelerate the penetration of services into under serviced areas and streamline the regulatory framework. According to the South Africa yearbook (2005/06:36) the Electronic Communications transactions act, 2002 (Act 25 of 2002), paved the way for a secure environment for e-commerce transactions. Similarly, the Telecommunications amendment act, 2001 (Act 64 of 2001), gives effect to the policy of managed liberalisation of the South African telecommunications market. It is expected that increased competition will bring down costs of telecommunications and remove growth constraints. Liberation of this sector became effective on the 1 February 2005.

In Kenya, Mudhai (2004) observes that the legal and structural changes that separated the regulatory and operational services of the Kenyan ICT strategy in 1998 and 1999 have now been effected. These policies have opened a new chapter for the telecommunications, radio and postal sectors, with the establishment of Telkom Kenya, the Communications Commission of Kenya (CCK) and the Postal Corporation of Kenya.

In relation to the types of ICT policies and strategies needed to incorporate women in development programs, Marcelle (2002:3) calls for the empowerment of women through the enhancement of skills, knowledge, and access to ICTs. This includes making improvements in access and promoting initiatives that include rural women and women in the informal sector. Marcelle further asserts that 85% of the world's-commerce websites are US-based, with Western Europe and Asia making up the rest. Not many people possess visa cards etc. that would enable them to buy off the internet.

It was observed that in-order to improve the ability of women in developing countries to take full advantage of the opportunities offered by information technology, there is need for more education at all levels, from basic literacy through to scientific and technological education. Women are also not likely to benefit equitably from ICT projects unless special efforts are made to identify their situation and needs and effective action is taken to incorporate their active participation in project implementation and development. For example, women not only have less access to the technology itself, but are also financially limited and have less time to learn and use the technology. Women are also absent from decision-making positions in information technology and in developing countries (see chapters 5.1 and 5.2).

Gender considerations are crucial from the beginning of project design, i.e. the planning stages of the project under consideration. Some of these include: (i) the need for sex-disaggregated data on projects, especially

those involving training; (ii) the need to correctly assess skills levels before training, as more women than men may have low skill levels in information technology, and this would necessitate adjusting training accordingly; (iii) the need to take into account *gender specific cultural constraints*, such as women's family responsibilities and/or difficulty in attending evening training sessions; (iii) and the need for post training follow-ups to ensure access, combat cultural constraints and promote skills retention.

As pointed out in chapter 8.4.12, apart from providing women with a platform that enables participation in the decisions taken regarding their lives, there is a need to: ensure that correct and accurate information is availed to women at all times; expose rural women, through the use of ICTs, to what other women are doing in other parts of the world/country in similar settings/situations; *build individual capacities through skills-enhancement programs*; and provide seed funds for initiating projects.

10.2.2. Auditing and mapping ICT use amongst women in Kenya and South Africa.

- Which ICT resources and what infrastructure can be found in the rural areas of Kenya and South Africa?
- How has ICT development impacted on rural development in South Africa and Kenya?
- How can Kenya and South Africa share and contribute to the socio - political and economic experiences gained thus far?
- How are ICT resources accessed and used by women in rural areas?

On the whole, the radio is highly accessed and is used by approximately 73% of the rural women in South Africa, particularly for education, health and social welfare needs. The TV plays an equally important role in accessing information, as 39% of the respondents use it for their information

requirements. The cell-phone has a clear advantage over the telephone, as 15% of the respondents use it, compared to 10.2% who use the telephone. Those mostly in the field of education (30; 15%) and social welfare (22; 11%) use videos. The computer/internet scores a dismal average of only 5.6% amongst respondents, and is also mostly used by those in the field of education (22; 11%).

It was observed that there is an acute lack of infrastructure which seriously limits opportunities for using ICTs for economic and social development. Results presented in chapter 7.3 indicate that the radio and television are the most commonly used ICTs amongst rural women in Kenya. While an average of 74.4% use the radio for their information needs, the TV is used by an average of 37.8% respondents. The cell-phone has a comparative advantage over the telephone as it is used by 12.8% of the respondents. The latter is used by only 4.0%. Notably, the use of films as a source of information is on average higher than the cell-phone and the telephone, as 14.6% use it to source information. While 4.6% use the video, 3.2% use mobile cinemas. Invariably, data indications are that the computer/internet and the CD-ROM have no value amongst rural women in Kenya.

Results shown in chapter 8.4.5 indicate the positive impact of the radio as it has enabled ordinary communities, who previously never had a communication platform, to use the medium to discuss their challenges and forge positive solutions. Media penetration in South Africa is no longer a major problem due to the development of community-owned media, such as *community radio*, which has allowed South Africans to exercise their right to freedom of expression.

ICTs have also been used to provide health and development information to rural communities in Kenya. This has increased access to ICTs in the rural communities as people use information to better their lives and obtain more knowledge.

It has also been observed that the use of volunteers to build the capacities of institutions in areas such as the documentation of community projects, information dissemination and management using appropriate ICTS, contributes positively towards rural development. In this way these workers, better known as Community Development Workers (CDWs), are able to not only enhance their own ICT skills, but also help local communities with updates on appropriate development information.

Additionally, computer literacy projects have been initiated in areas such as the Limpopo Province and in some high schools in the region. Such projects have helped women overcome technophobia, find employment and write business proposals.

Chapter 8.4.4 illustrates that the radio has been used to provide information, entertain and educate the community. In order to build an enabling environment and ensure continuity, it has been observed that organizations that work with rural communities have to:

- Set standards for the sector and monitor implementation;
- Provide information and advice to members;
- Represent the collective interests of members;
- Create structures and systems that encourage community radio *stations that share experiences, skills, best practice models and resources;*
- Coordinate capacity building in the sector; and
- Forge strategic alliances and partnerships with key stakeholders in order to facilitate the delivery of services, resources, funding and *support to both members and the sector.*

As illustrated in chapter 8.4.6, the radio is a cheap medium that gives rural women access to information and enables communication.

The combined use of other ICT technologies such as computers, PDAs, TVs and VCRs, World Space Radios, Digital cameras, mobile phones, and voice recorders contributes toward information sharing amongst rural communities. This is because most women are marginalized when faced with accessing information at home. By ensuring that this equipment is available at resource centers, women are given equal if not improved chances of using ICTs.

The use of ICTs, such as world space satellite technologies in East Africa's dry lands, has also enabled disadvantaged communities in rural areas to receive timely information on sustainable development, markets and better livelihoods. Some of these ICT-based initiatives include the Open Knowledge Network (OKN), which is a forum networking rural people that allows them to share ideas on development practices, sources of livelihoods and ways of life. The project offers the poor a link with the outside world by catering for the exchange of knowledge through tailored ICTs. Using special software, (Open eNRICH) the rural communities generate and exchange local content. OKN supports a bottom-up structure of knowledge sharing through the establishment of community access points. This project is implemented in Kenya and involves communities in Isiolo, Homa-Bay, Garissa, Magadi, Isinya, Marsabit, Nyahururu and Kyuso-Mwingi. In Tanzania, it involves communities at Shinyanga, Dodoma and Kayunga. Partner organizations like Action Aid have also started OKN initiatives.

Other examples include the online information service for non-chemical pest management in the tropics (OISAT Info). OISAT Info is a web-based practical guide for trainers, extension workers and farmers on minimizing pest damage safely, affordably, effectively and in an ecologically-sound way. OISAT Info provides tips on lowering the cost of production based on recommended alternative pest, disease and weed control methods. The

OISAT concept (from-web-to-field-to-web) promotes the validation of local knowledge.

10.2.3 ICT information needs of rural women in areas such as health, education, agriculture, social welfare, entertainment, commerce and industry, in both Kenya and South Africa.

- Which ICTs specifically serve rural women's information needs and in what areas?
- How do ICTs enhance rural women's social welfare and quality of life?

As was noted in chapter 7.3 on ICT resources used by rural women, the use of "old" technologies, such as the radio and TV, is a predominant factor in all sectors of South Africa. Compared to 10.2% who used the landline telephone, the mobile phone was used by 15.0% of the rural respondents in KZN (South Africa).

The prevalence of the radio and TV is also high in all sectors in rural RVP (Kenya). Survey findings in chapter 7.3 revealed that the radio alone scored an average of 74.4%, while the TV averaged 37.8%. An insignificant 1.0% of the rural population uses the computer/internet. While the mobile phone was used by 12.8%, only 4.0% of the respondents use the telephone.

Empirical results in chapter 7.6 from both Kenya and South Africa further indicate that ICTs enable most women to keep abreast of current affairs. Many rural women underscored the role ICTs play in daily news broadcasts. It was also noted that most respondents (91.5% in South Africa and 91.0% in Kenya) felt that ICTs, particularly the radio and TV, helped them socially enrich their lives. This was followed closely by the need to keep in touch with family and friends (81.0% in South Africa and 87.0% in Kenya). To most respondents, the mobile phone was particularly useful in this context. Interestingly, although the use of the fax machine (44%) stood out as an

important activity, particularly in South Africa, it scored dismally in Kenya (16.0%).

10.2.4 Barriers faced by women when accessing and using ICTs.

- What problems do women experience when accessing and using ICTs?

Survey results in chapters 7.7 and 7.8 indicate that problems of access and exclusion abound in RVP (Kenya) and in rural KZN (South Africa). In South Africa, 56.5% of the respondents felt that ICT services were unaffordable, while 41.5% felt that ICTs were too far removed from them. Computer illiteracy accounted for 21% of the rural respondents in South Africa. In Kenya, 32.0% of the respondents expressed problems relating to cost, while another 19% cited distance and 13.5%, time. 16% of the rural respondents in RVP (Kenya) expressed problems stemming from computer illiteracy.

10.2.5 ICT training needs of rural women in Kenya and South Africa.

- What are rural women's ICT training needs?
- How can the training needs of women be addressed, particularly in rural areas?

It was observed that 42.0% of the respondents in KZN (SA) and 45.5% in RVP (Kenya) felt that adult education was essential. Interestingly, of all the enlisted training needs, computer/internet training came first as 66.5% in KZN (SA) and 81.5% in RVP (Kenya) felt that this training would be essential. This was followed by 50.5% of the respondents in KZN (SA), and 62.5% in RVP (Kenya), stating that vocational training would be of foremost importance to them.

In order for the training to be effective amongst rural women, it was found that the following factors need to be taken into consideration:

- Training needs assessments have to be conducted in order to determine the set of knowledge the women need most
- Training has to be geared towards economic empowerment
- Training should be conducted within the community to enable individuals to perform family duties in the evening
- Needs surveys have to be conducted in order to establish the training needs of the participants
- Training has to be relevant in terms of the daily activities carried out by women. In other words, participants have to be trained according to their occupational needs - as an example, small and medium scale entrepreneurs (SMME's) would require training in records management, in addition to other training needs (Women'snet)

10.2.6 Conceptual model for ICT development and application for African rural women.

- How can ICT initiatives be developed and applied, particularly amongst women in rural areas?
- Which factors are critical for the success of an organization that works with rural women and ICTs?
- Which are the key areas of activity that should receive constant and careful attention in projects that work with rural women and ICTs?

The development, management and implementation of ICT initiatives is an ongoing debate, particularly in African countries. It was established in chapters 8.4.9, 8.4.10 and 8.4.11, that ICTs are necessary tools in development and when used appropriately, can contribute towards

development, particularly amongst marginalized populations. To this end, it was found that:

- Women should be involved in deciding which ICTs would be of benefit to them
- ICTs must add direct and immediate benefit to the lives of the women involved
- There is a need for sensitization and training as regards the use of ICTs
- There is a need to develop more resource centers with capacities to train communities about ICTs
- Projects have to work in collaboration with the rural women and be flexible to their needs and requirements
- There is always a need for a feasibility study or needs assessment survey before project implementation
- The type of physical infrastructure available has to be considered prior to project implementation
- The gender dynamics/demographics of the community must be taken into account before project implementation, i.e., percentage of women, age groups, occupations etc.
- Continual support, such as trouble shooting over the telephone, is necessary
- Frequent personal visits are also necessary

Among the factors critical to the success of an organization that works with rural women are the following:

- Women must be involved in the process, right from the initiation of the project, in order to incorporate their feelings and ideas
- Organizations must be able to plan in such a manner that activities are set at the pace of the women involved and not the organization's

- Organizations must be able to ensure that the activities are of interest and importance to the women
- There is a need to identify women with an interest in ICTs and subsequently involve them in training programs.
- ICT tools should be brought closer to the rural women in order to save time that would otherwise be wasted while accessing tools
- ICTs have to be appropriate for use in a rural set up
- The volatility of the environment, for instance the availability of electricity, political climate etc., should be determined

Primary areas of activity that should receive constant and careful attention in projects that work with rural women and ICTs include the following:

- Refresher training in the use of the modern ICTs. These areas should include a good tailor made training program that suits local situations
- Updates on new technologies and their benefits to rural communities, particularly women
- Economic empowerment, as most rural women are breadwinners
- *Strategic planning of meetings* that involve women. Meetings should not be frequent
- Awareness creation and the mobilization of women
- Familiarizing project end-users with the objectives of the organization
- Creating awareness through available media resources about the intentions of the project way in advance
- Ensuring that there is sufficient physical and information infrastructure
- Being sensitive to gender dynamics - projects should be flexible to the times the women can avail themselves for training

10.3 Recommendations

In order for women to benefit most from ICTs, the following issues need to be addressed:

10.3.1 Literacy

- (a) *Due to high levels of illiteracy in computer technology and in basic education amongst rural African women, there is a need to integrate ICT with literacy education in many areas.*
- (b) In order to create a demand-driven ICT consumer community in rural areas, hindrances to accessibility must be significantly reduced either before or during the provision of the technology. This necessitates training and skills enhancement initiatives amongst other participatory development programs such as focus group discussions, direct interviews and workshops.
- (c) The development of professionals and teachers as viable intermediaries in bridging the digital divide experienced by low-literate or illiterate youth in school education programs in the rural areas is also of crucial importance.

10.3.2 Cost

Cost issues of ICT access particularly affect women due to their family responsibilities, e.g. health and the education of their children. It is therefore necessary to effect and implement policies that involve connectivity and take into account the constraints facing the marginalized. According to the World Bank, competition between telecommunication companies can slash service costs and improve access to the said technology. Since large telecom operators tend to limit their operations to high income urban areas, privatization should be extended in order to allow small entrepreneurs to

supply telecomm services to rural areas. Through regulation and subsidies, private operators can be invited to bid for the provision of services in areas that are not commercially viable in return for a subsidy financed with a universal access fund.

10.3.3 Education

As rural women generally experience lower levels of education than men and a lack of proficiency in English, ICT training for women would need to be gender-sensitive and offered by women trainers wherever possible.

10.3.4 Women's Time

Women generally have heavy responsibilities, particularly those involving their families, which result in time constraints. It is therefore imperative that ICTs are incorporated not only according to the information needs of women, but also in light of other activities and projects aimed at empowerment, e.g. women's NGOs, health centres, educational institutions, self-employment and entrepreneurial centres, and even churches. In this way, women would be able to experience the tangible use of ICTs.

10.3.5 Training

Training recommendations highlight the need to:

a) Support programs that provide hardware, modems and online access to women's NGOs and women's centres in organizations and institutions which are embedded in appropriate women's support and distribution systems.

- b) Support the implementation of ICT technical training programmes for women, and women's access to higher-level training in technical expertise and repair services.
- c) Examine the role that existing local and national level women's NGOs can play in ICT distribution, training, and support in partnership with technology providers.
- d) Ensure appropriate ongoing follow up technical support and training. This includes women-specific training, free training, links with ongoing user support, and mentoring (women supporting women) in communities.
- e) Encourage training and workshops on proposal writing and the language, style and methodologies that are generally accepted by donors and agencies.
- f) Ensure that technical training, access and delivery systems, and technical occupational arrangements are flexible enough to adapt to women's schedules or childcare responsibilities.
- g) Explore the potential of using ICTs for women's education through distance learning, CD-ROMs and other ICT-related opportunities.
- h) Develop school curricula that encourage girls to enter technology and science related fields - e.g., the Gender and Science and Technology Association (GASAT) has regional African members who can be consulted for strategies and curricula information on science education for girls and women.
- i) Encourage women to feel at ease with the use of new technologies, especially computers. Women need to be encouraged to feel confident in their ability to use ICTs productively.
- j) Focus on thematic ICT activities that provide tangible benefits of participation. These include:

- (i) Health information and advocacy for women and children (especially concerning reproductive rights and AIDS)
- (ii) Women's rights and legal frameworks supporting the education of women and girls
- (iii) Business and entrepreneurial information

10.3.6 Information development, dissemination and management using ICTs (Conceptual Model).

It is necessary to:

- a) Conduct a feasibility study/needs assessment survey in order to determine the availability of physical infrastructure, and the gender dynamics/demographics of the community - percentage of women, age groups, occupations and education levels - before project implementation.
- b) Create an advanced awareness of the intentions of the project through available media resources.
- c) Work with women's groups and women leaders in order to define information systems that tackle women's concerns and are designed to support their daily productive activities.
- d) Encourage a two-way information communication process between an organization and its target beneficiaries by establishing community development committees that comprise project beneficiaries.
- e) Collaborate closely with other stakeholders working in the community, thereby avoiding the duplication of efforts.

- f) Promote the participation of female beneficiaries in the planning and implementation of computer/ internet initiatives from the initiation phase to the implementation phase.
- g) Build ICT systems around women's areas of concern/needs, to enable the production and delivery of applicable information systems that are relevant to the women.
- h) Promote the use of a combination of technologies, such as the computer and related services (i.e. e-mail and the internet), wireless technology (i.e. the radio), satellite technology, traditional media communication technology (e.g. video), and discussion groups, to share and disseminate information.
- i) Establish local telecentres with female technicians and personnel on staff, preferably using existing local infrastructure - local development institutions like schools or even churches.
- j) Encourage and support the use of local languages in sharing and disseminating information.
- k) Explore the potential of developing the capacity of women's NGOs in order to deliver and support ICT use on a long-term basis.

10.3.7 Encourage electronic networking among women scientists

- a) Female African scientists should be encouraged to establish their own networks and link up with international networks.
- b) As natural resource managers and producers of much of the subsistence food in Africa, women's concerns should be carefully considered in the development of these information systems.
- c) Facilitation of regional and international links with other groups active in these theme areas, including the many electronic initiatives of African women expatriates abroad, and of women in other parts of Africa.

10.3.8 Information needs of rural women

- a) There is a need to establish gendered databases in every sector of the economy (for instance business entrepreneurship information, health issues etc.) which should be accessible over the WWW and via email.
- b) There is a need to establish mailing lists, electronic conferences, and listservs that link up with other groups within and outside Africa. These *listservs could then be used to foster cross-sector discussion, moral and technical support and strategizing amongst: ICT trainers, technologists and educators at national and international levels; women in health research and advocacy; food producers, natural resource managers; female lawyers and legal rights advocates; and science and technology practitioners at university/research, applied and indigenous S&T levels.*

10.4 Recommendations for further research

The ICT sector is a dynamic field with new and emerging innovations being released at a considerable pace. National ICT policies should therefore be able to reflect this through *regular updates and revisions.*

Research should be done on how to incorporate gender into African internet connectivity and systems, and how best to promote the participation of women in the planning and implementation of major Africa-internet initiatives.

Research could also be done to determine the state of national level ICT policies and the degree of female involvement in the process of policy development.

Research should be done on how to encourage electronic networking among women scientists both regionally and internationally.

10.5 Conclusions

The study has detailed a strong correlation between the levels of education within a community, types of ICTs used, information seeking behavior and the socio-economic factors of an environment.

It was established that the enactment of a National Policy on ICT development does not guarantee the efficient and effective use of ICTs, especially by marginalized rural communities. Special efforts must be made to involve rural communities. This would require policies that encourage competition between various stakeholders in the telecommunications industry, policies that govern the costs of ICTs, and policies that govern connectivity in areas that are not commercially viable. As women form the majority of most rural households, special efforts have also got to be taken to involve women in development initiatives such as skill enhancement programs, participatory mechanisms and follow-up programs.

The study also established that the information needs of women are unique and peculiar to women's social and economic environments. Unless factors such as time and women's social responsibilities are taken into account, most rural women stand to be marginalized in rural development initiatives.

Special efforts have to be taken in order to create gendered databases that reflect the needs of rural women in areas such as health, business, social welfare and education. In this way, the content matter of information will not only be relevant to the needs of the women, but will also reflect the needs suitable to their local environments.

Furthermore, training as a process in development is a crucial factor and must be incorporated in development programs at all times. A number of factors have to be taken into consideration, two of which include needs

assessment and the use of local languages.

It has been proven that the success of ICTs in rural development yields better results when social, political, and economic factors and various modes of communication are taken into account. Such modes of communication include: the computer and other related services, such as e-mail and the internet; wireless technology, such as the radio; satellite technology; traditional media communication technology, such as the video; and discussion groups; all of which have to be seen to work together.

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APPENDIX A

INTERVIEW SCHEDULE ON THE ROLE OF INFORMATION COMMUNICATION TECHNOLOGIES (ICTs) IN HARNESSING INFORMATION FOR Kenyan RURAL WOMEN

Most questions require you to tick the answers. Only a few require short answers to be filled. No names should be provided. Please note that the information you provide will be treated with the utmost confidentiality. Thank you.

Questionnaire Number:.....

District:.....

Municipality:.....

Ward:.....

Appendix A

Interview Schedule for women in rural areas

Dear Respondent,

My name is Alice Kwake and I am PhD student registered with the Department of library and Information Science at the University of Zululand in South Africa. I am conducting a study on the role of ICTs in harnessing information for women in rural development. The purpose of this study is to identify and investigate ICTs that enable the accessibility to and utilization of information, enhance quality of life, and improve economic standards of rural women, by creating a model for the development, management, exploitation and use of ICTs in an African rural environment.

The significance of this study is to help empower women through the information revolution process, by seeking to show the mechanisms of promoting information among women with the help of ICTs. Similarly, the study will enlighten decision makers on important mechanisms needed to actively involve women in the identification and definition of their information needs and the need to enact appropriate ICT policies.

Any information given will be treated confidentially and is strictly for the use of this study. Your assistance is therefore highly appreciated.

SECTION ONE

PERSONAL INFORMATION

Please allow me to ask you a few personal details about yourself:

1. What job title do you hold?

- | | |
|----------------------|-----|
| Small scale trader | [] |
| Clerical worker | [] |
| Com. Dev. Worker | [] |
| Domestic Worker | [] |
| Educator/Teacher | [] |
| Farmer | [] |
| Farm worker | [] |
| Gardener | [] |
| House wife/Homemaker | [] |
| Entrepreneur | [] |
| Nurse | [] |
| Preacher | [] |
| Skilled Laborer | [] |
| Student | [] |
| Traditional healer | [] |
| Traditional leader | [] |
| Women group leader | [] |
| Other | [] |

Please state other job title not mentioned above

.....

2. What is your highest educational attainment?

- | | |
|----------------------------------|-----|
| No schooling | [] |
| Primary | [] |
| Secondary | [] |
| Tertiary - e.g. college /varsity | [] |

3. What is your age group/bracket?

- | | |
|---------------|-----|
| 13-20 years | [] |
| 21-30 years | [] |
| 31-40 years | [] |
| 41-50 years | [] |
| Over 51 years | [] |

4. What racial group do you belong to?

Black	[]
White	[]
Indian	[]
Colored	[]

SECTION TWO

INFORMATIONS NEEDS AND INFORMATION SEEKING BEHAVIOUR OF RURAL WOMEN

Instructions to the research assistant:

- (i) Pls ensure that the respondent answers all questions.
- (ii) Allow the respondent time to give you her own answers by gently probing her.

I. HEALTH INFORMATION NEEDS, PURPOSES, SOURCES AND ICTS USED

I now want to know more about your information needs in health.

Q1.1. Could you explain to me the specific areas you need health information in?

(Instructions to the interviewer: Pls get at least 3 areas of need from the respondent for example, for coughs, family planning, malaria etc)

.....
.....
.....

Q1.2. Could you please tell me how, or, to what purpose you use this health information for?

(Instructions to the interviewer: Pls get at least 3 areas of purpose need from the respondent for example, my personal welfare, my child's welfare etc.

.....
.....
.....

Could you tell me where you source/get this health information from? <i>(Tick one or more options)</i>	Could you also tell me which ICTs you frequently use to access/receive this health information? <i>(Tick one or more options)</i>
newspapers []	Radio []
Magazines []	Films []
Journals []	Videos []
Books []	TV []
Inf. Centers/libraries []	Mobile Cinemas []
Friends/neighbors []	Cell Phone []
Family members []	Telephone []
Community leaders []	Computer/Internet []
Local councils []	CD-ROMs []
City Councils []	
Area leaders []	
Trade fair /Exhibitions []	
Traditional healers []	
Schools/Educators []	
Social Workers []	
Nurses/Midwives []	
Others, pls. state clearly.....	Others, pls. state clearly.....

2. EDUCATIONAL INFORMATION NEEDS, PURPOSES, SOURCES AND ICTS USED

Let us now talk about your education needs.

Q2.1. Could you explain to me the specific areas in Education in which you need information in?

(Instructions to the interviewer: Pls get at least 3 areas of need from the respondent for example, course work, research topics, student services etc)

.....
.....
.....

Q2.2 Could you please tell me how, or, to what purpose you use this information for?

(Instructions to the interviewer: Pls get at least 3 areas of purposes from the respondent, for example, for study assignments, counseling etc)

.....
.....
.....
.....

Q2.3

Q 2.4

Could you tell me where you source/get Educational information from? (Tick one or more options)	Could you also tell me which ICTs you frequently use to access/receive this Educational information? (Tick one or more options)
newspapers []	Radio []
Magazines []	Films []
Journals []	Videos []
Books []	TV []
Inf. Centers []	Mobile Cinemas []
Friends/neighbors []	Cell Phone []
Family members []	Telephone []
Community leaders []	Computer/Internet []
Local councils []	CD-ROMs []
City Councils []	
Area leaders []	
Trade fair /Exhibitions []	
Traditional healers []	
Schools/Educators []	
Social Workers []	
Nurses/Midwives []	
Others, pls. state clearly.....	Others, pls. state clearly.....

3. SOCIAL WELFARE INFORMATION NEEDS, PURPOSES, SOURCES AND ICTS USED

Let us now focus our attention on Social Welfare. In other words, activities that we get ourselves involved in:

- (i) to enhance or raise our standard of living
- (ii) for entertainment and leisure.

Q3.1. Could you explain to me the specific areas in Social Welfare in which you need information in?

(Instructions to the interviewer: Pls get at least 3 areas of need from the respondent for example, Religion, water resources, latrines, music etc)

.....
.....
.....
.....

Q3.2 Could you please tell me how, or, to what purpose you use this social information for?

(Instructions to the interviewer: Pls get at least 3 areas of purposes from the respondent, for example, for spiritual growth, for leisure etc)

.....
.....
.....
.....

Q3.4

Q 3.5

Could you tell me where you source/get Social Welfare information from? (Tick one or more options)	Could you also tell me which ICTs you frequently use to access/receive Social Welfare information? (Tick one or more options)
newspapers []	Radio []
Magazines []	Films []
Journals []	Videos []
Books []	TV []
Inf. Centers []	Mobile Cinemas []
Friends/neighbors []	Cell Phone []
Family members []	Telephone []
Community leaders []	Computer/Internet []
Local councils []	CD-ROMs []
City Councils []	
Area leaders []	
Trade fair /Exhibitions []	
Traditional healers []	
Schools/Educators []	
Social Workers []	
Nurses/Midwives []	
Others, pls. state clearly.....	Others, pls. state clearly.....

4. AGRICULTURAL INFORMATION NEEDS, PURPOSES, SOURCES AND ICTS USED

Now let us talk about Agriculture.

Q4.1. Could you explain to me the specific areas in Agriculture in which you need information in?

(Instructions to the interviewer: Pls get at least 3 areas of need from the respondent for example for farm inputs- fertilizer, farm technology, crop diseases etc)

.....
.....
.....
.....

Q4.2 Could you please tell me how, or, to what purpose you use this agricultural information for?

(Instructions to the interviewer: Pls get at least 3 areas of purposes from the respondent for example, for farming, for good harvest etc)

.....
.....
.....
.....

Q4.3

Q 4.4

Could you tell me where you source/get Agricultural information from? (Tick one or more options)	Could you also tell me which ICTs you frequently use to access/receive Agricultural information? (Tick one or more options)
newspapers []	Radio []
Magazines []	Films []
Journals []	Videos []
Books []	TV []
Inf. Centers []	Mobile Cinemas []
Friends/neighbors []	Cell Phone []
Family members []	Telephone []
Community leaders []	Computer/Internet []
Local councils []	CD-ROMs []
City Councils []	
Area leaders []	
Trade fair /Exhibitions []	
Traditional healers []	
Schools/Educators []	
Social Workers []	
Nurses/Midwives []	
Others, pls. state clearly.....	Others, pls. state clearly.....

5. BUSINESS AND TRADE INFORMATION NEEDS, PURPOSES, SOURCES AND ICTS USED

I would now like to know more about your information needs in Business and trade.

Q5.1. Could you explain to me the specific areas in Business and trade in which you need information in?

(Instructions to the interviewer: Pls get at least 3 areas of need from the respondent e.g. Handicrafts, stock supplies etc)

.....
.....
.....
.....

Q5.2 Could you please tell me how, or, to what purpose you use this Business/Trade information for?

(Instructions to the interviewer: Pls get at least 3 areas of purposes from the Respondent, e.g. example, for skills embroidery, stocking etc)

.....
.....
.....
.....
.....

Q5.3

Q 5.4

Could you tell me where you source/get Business and Trade information from? (Tick one or more options)	Could you also tell me which ICTs you frequently use to access/receive Business and Trade information? (Tick one or more options)
newspapers []	Radio []
Magazines []	Films []
Journals []	Videos []
Books []	TV []
Inf. Centers []	Mobile Cinemas []
Friends/neighbors []	Cell Phone []
Family members []	Telephone []
Community leaders []	Computer/Internet []
Local councils []	CD-ROMs []
City Councils []	
Area leaders []	
Trade fair /Exhibitions []	
Traditional healers []	
Schools/Educators []	
Social Workers []	
Nurses/Midwives []	
Others, pls. state clearly.....	Others, pls. state clearly.....

SECTION 3

HINDERANCES TO ICT TOOLS AND SERVICES

This section would like to assess some of the factors that hinder your access to ICTs

1. Which of the following factors hinder your access to ICT tools and services
(You may tick more than one option).

- | | |
|---|-----|
| (a) Lack of computer training | [] |
| (b) Cultural taboos | [] |
| (c) Time | [] |
| (d) Distance to where ICT services are provided
is too far | [] |
| (e) Affordability | [] |
| (f) Telephone services are expensive | [] |
| (g) Roads not good | [] |
| (h) Family commitments | [] |
| (i) Others reasons (please specify)..... | [] |

2). Using your own words, please comment on the use and availability of ICTs
in your community.

.....
.....
.....

SECTION 4

ENHANCEMENT OF QUALITY OF LIFE AND SOCIAL WELFARE

This section would want to assess how ICTs have improved your quality of life. Please answer all questions using the scale of 4- 1 that is provided

1. In what areas do ICTS serve you best?

	(4) Always	(3) Often	(2) Sometimes	(1) Never
To keep in touch with family and friends				
For research purposes				
For Distance Education				
Contact local customers/Suppliers				
Contact business Support Agencies				
Internet and related services				
To fax documents				
Entertainment				
To listen to news				
E-commerce/Trade				
E-mail				
Data processing				
<i>Pls specify/list other areas ICTs serve you best</i>				

SECTION 5

TRAINING NEEDS

This section would like to know what kind of training you feel you need so as to help you access and use ICTs more often.

1. What type of training do you think you require to help you access ICTs more often? *(pls answer all questions)*

	(4)	(3)	(2)	(1)
	Very Essential	Essential	Quite Essential	Not very Essential
Basic Primary Education				
Secondary School Education				
Computer Training				
Internet Training				
Vocational training				
Adult Basic Education				
Other type of training (please specify).....				

Thank you very much for your co-operation.

Appendix B (i)

INTERVIEW SCHEDULE FOR KEY INFORMANTS

Dear Respondent,

My name is Alice Kwake and I am PhD student, registered with the University of Zululand in South Africa. I am carrying out a study on the role of ICTs in harnessing information for women in rural development. The purpose of this study is to investigate and identify ICTs that provide access to and use of information, enhance quality of life, and improve economic standards of rural women, by creating a model for the development, management, exploitation and use of ICTs in an African rural environment.

The significance of this study is to help empower women through the information revolution process, by seeking to show the mechanisms of promoting information among women with the help of ICTs. Similarly, the study will enlighten decision makers on important mechanisms needed to actively involve women in the identification and definition of their information needs and the need to enact appropriate ICT policies.

Any information given will be treated confidentially and is strictly for the use of this study. Your assistance is therefore highly appreciated.

1. What is the goal/mission of your organization?
2. What is the purpose of your organization?
3. What position do you hold within the organization?
4. In what ways has your organization contributed to the socio-economic development gained thus far?
5. Which ICT resources does your organization use and how do you implement them amongst rural women?
6. What specific changes have you seen amongst rural women and the community at large since the introduction of ICTs?
7. How do ICTs enhance rural women's social welfare and quality of life?
8. How can NGO's that work with ICTs help rural women help themselves?
9. How can ICT initiatives be developed and applied, especially amongst women in rural areas?
10. How can NGO's help rural women help themselves?
11. How can the training needs of women be addressed, particularly in rural areas?
12. Which factors are critical for the success of an organization that works with rural women and ICTs?
13. What are the key areas of activity that should receive constant and careful attention in projects that work with rural women and ICTs?

Appendix B (ii)

Full List of research questions used in the study

1. Which national policies and strategies on ICT are in place in Kenya and South Africa?
2. How and where are national policies and strategies implemented in Kenya and South Africa?
3. What impact have ICTs had on rural women in South Africa and Kenya?
4. How can Kenya and South Africa share and contribute to the socio - political and economic experiences gained thus far?
5. How accessible/available are ICT resources to rural women in KZN, and can they be easily used?
6. Which ICT resources are used by rural women and why?
7. Which ICT resources do organisations that work with rural African women use, and how do they implement them?
8. What problems do women experience when accessing and using ICTs?
9. Which ICTs specifically serve rural women's information needs and in what areas?
10. How do ICTs enhance rural women's social welfare and quality of life?
11. What are rural women's training needs in ICT skills?
12. How can educational and training needs of women be addressed, particularly in rural areas?
13. What national policies and strategies are necessary to develop ICT resources and infrastructure for the rural woman in Kenya?
14. How should national ICT policies and strategies that promote gender equity and the use of resources be implemented?
15. How should national ICT policies and strategies that include

marginalized areas and populations be implemented?

17. How can local governments help women help themselves?

APPENDIX C

Kenya@OneSiteEurope

Name	Acronym	Country
Civil Society		Kenya
<u>ActionAid Kenya</u>		Kenya
<u>AfriAfya</u>		Kenya
<u>Africa Environmental Information Network</u>	AEIN	Kenya
<u>Africa Nazarene University</u>	ANU	Kenya
<u>Africa Peace Forum International Resource Group</u>		Kenya
<u>Africa World Conference of Religions for Peace</u>		Kenya
<u>Africaid</u>	Africaid	Kenya
<u>African Academy of Sciences</u>	AAS	Kenya
<u>African Agricultural Technology Foundation</u>	AATF	Kenya
<u>African Economic Research Consortium</u>	AERC	Kenya
<u>African Energy Policy Research Network</u>	AFREPREN	Kenya
<u>African Forestry Research Network</u>	AFORNET	Kenya
<u>African Foundation for Research and Development</u>	AFRAND	Kenya
<u>African Institute for Higher Technical Training and Research</u>	AIHTTR	Kenya
<u>African Medical Research Foundation</u>	AMREF	Kenya
<u>African Network for Agroforestry Education</u>	ANAFE	Kenya
<u>African Network of Scientific and Technological Institutions</u>		Kenya
<u>African Regional Centre For Computing</u>		Kenya
<u>African Technology Policy Studies Network</u>	ATPS	Kenya
<u>African Virtual University</u>	AVU	Kenya
<u>African Wildlife Foundation</u>		Kenya
<u>African Women Leaders in Agriculture and the Environment</u>		Kenya

<u>African Women's Development and Communications Network</u>	FEMNET	Kenya
<u>AFRICOM Documentation and Information Centre</u>		Kenya
<u>Aga Khan Hospital. Library</u>		Kenya
<u>Aga Khan University</u>		Kenya
<u>Agency for Co-Operation & Research in Development</u>	ACORD	Kenya
<u>Agri-health Initiative (AHI) - Dominion Media Ltd. (DM)</u>	AHI	Kenya
<u>Agroforestry Research Networks for Africa</u>	AFRENA	Kenya
<u>All Africa Conference of Churches</u>	AACC	Kenya
<u>All African Conference of Churches</u>		Kenya
<u>Amani Christian Community Development Project</u>	Amani CCDP	Kenya
<u>Animal Physiology and Biotechnology Research Laboratory .</u>		Kenya
<u>ARCHWAY Technology Management Ltd.</u>	Archway	Kenya
<u>Arid Lands Information Network - Eastern Africa</u>	ALIN-EA	Kenya
<u>ASARECA Animal Agriculture Research Network</u>	AAARNET	Kenya
<u>Association of Fish Processors & Exporters of Kenya</u>	AFIPEK	Kenya
<u>Association of Management Training Institutions of Eastern and Southern Africa</u>	AMTIESA	Kenya
<u>Association of Member Episcopal Conferences in Eastern Africa</u>	AMECEA	Kenya
<u>Association of Project Management Kenya</u>		Kenya
<u>Au Sable Institute</u>		Kenya
<u>Biodiversity International</u>	IPGRI	Kenya
<u>Bukura Agricultural College</u>	BAC	Kenya
<u>Butula Multi-Purpose Youth Group</u>		Kenya
<u>CABI Africa Regional Centre</u>	CABI	Kenya
<u>Caritas Española Sudan Programme</u>		Kenya
<u>Caritas Switzerland Sudan Programme</u>		Kenya
<u>Catholic Relief Services</u>	CRS	Kenya

<u>Catholic Relief Services (Sudan Office)</u>	CRS	Kenya
<u>Catholic University of East Africa</u>		Kenya
<u>Catholic University of Eastern Africa</u>	CUEA	Kenya
<u>Center for Leadership and Governance</u>	CFLAG	Kenya
<u>Centre for African Family Studies</u>	CAFS	Kenya
<u>Centre for Corporate Governance</u>	CCG	Kenya
<u>Centre for Diplomacy</u>		Kenya
<u>Centre for Governance and Development</u>	CGD	Kenya
<u>Church Ecumenical Action in Sudan</u>	CEAS	Kenya
<u>Climate Network Africa</u>		Kenya
<u>Coffee Research Foundation</u>		Kenya
<u>College of Biological and Physical Sciences</u>		Kenya
<u>Commission for Higher Education</u>		Kenya
<u>Community Animal Health Network</u>	CAHNET	Kenya
<u>Community Based Resource Library</u>		Kenya
<u>Cordaid Regional Office Nairobi</u>	CORDAID	Kenya
<u>Daystar University - Athi River Campus</u>		Kenya
<u>East Africa Natural History Society</u>		Kenya
<u>East and Southern African Leather Industries Association</u>	ESALIA	Kenya
<u>Eastern Action Club for Africa</u>	EACA	Kenya
<u>Eastern Africa Environmental Network</u>	EAEN	Kenya
<u>Eastern Africa Farmers Federation</u>	EAFF	Kenya
<u>EcoNews Africa</u>		Kenya
<u>Education Centre for Women in Democracy</u>	ECWD	Kenya
<u>Egerton University</u>		Kenya
<u>Egerton University</u>		Kenya
<u>Environment Liaison Centre International</u>	ELCI	Kenya
<u>Environmental Network of Africa</u>		Kenya
<u>Export Promotion Council Kenya</u>		Kenya
<u>Federation of Kenya Employers</u>		Kenya

<u>Food and Trade Network for East Africa</u>	FATNEA	Kenya
<u>Ford Foundation</u>		Kenya
<u>Forest Action Network</u>	FAN	Kenya
<u>Forest Action Network</u>	FAN	Kenya
<u>Forest Action Network Resource Centre</u>	FANRC	Kenya
<u>Forum on Early Warning and Early Response</u>	FEWER	Kenya
<u>Forum on Organic Resource Management and Agricultural Technologies</u>	FORMAT	Kenya
<u>Foundation for Sustainable Development in Africa</u>		Kenya
<u>Foundation for the Promotion of Children's Science Publications in Africa</u>		Kenya
<u>French Institute for Research in Africa</u>		Kenya
<u>Fresh Produce Exporter's Association Kenya</u>	FPEAK	Kenya
<u>Friedrich Ebert Stiftung</u>	FES	Kenya
<u>Green Belt Movement</u>	GBM	Kenya
<u>Horn of Africa Relief and Development Organization</u>		Kenya
<u>Horticultural Crop Development Authority</u>		Kenya
<u>Infowide</u>		Kenya
<u>Institut Francais de Recherche en Afrique</u>		Kenya
<u>Institute for Advanced Studies in Economics and Management</u>	IASEM	Kenya
<u>Institute for Meteorological Training and Research</u>		Kenya
<u>Institute for Policy Analysis and Research</u>	IPAR	Kenya
<u>Institute of Diplomacy and International Studies</u>		Kenya
<u>Institute of Economic Affairs</u>	IEA	Kenya
<u>Institute of Health Research and Services</u>		Kenya
<u>Institute of Primate Research</u>		Kenya
<u>Institutional and Policy Support Team</u>	IPST	Kenya
<u>Inter-African Bureau for Animal Resources</u>		Kenya
<u>Intermediate Technology Development Group - Eastern Africa</u>	ITDG	Kenya

<u>Intermediate Technology Development Group - Eastern Africa</u>	ITDG	Kenya
<u>International Centre for Economic Growth</u>	ICEG	Kenya
<u>International Centre of Insect Physiology and Ecology</u>	ICIPE	Kenya
<u>International Clinical Epidemiology Network - Africa</u>		Kenya
<u>International Committee of the Red Cross</u>	ICRC	Kenya
<u>International Community Economic Development</u>	ICED	Kenya
<u>International Council of African Museums</u>		Kenya
<u>International Crisis Group</u>		Kenya
<u>International Development Research Centre</u>	IDRC	Kenya
<u>International Institute of Rural Reconstruction</u>	IIRR	Kenya
<u>International Livestock Research Institute</u>	ILRI	Kenya
<u>International Maize and Wheat Improvement Centre (CIMMYT): regional office, Nairobi</u>	CIMMYT Nairobi	Kenya
<u>International Organization for Migration</u>	IOM	Kenya
<u>International Service for the Acquisition of Agri-Biotech Applications</u>		Kenya
<u>International Union for the Conservation of Nature and Natural Resources</u>		Kenya
<u>Jomo Kenyatta University of Agriculture and Technology</u>	JKUAT	Kenya
<u>K-Rep Development Agency</u>		Kenya
<u>Kabarak University</u>		Kenya
<u>Kamurugu Agricultural Development Initiative</u>	KADI	Kenya
<u>Kenya Agricultural Information Resource Centre</u>		Kenya
<u>Kenya Agricultural Research Institute</u>	KARI	Kenya
<u>Kenya AIDS NGOs Consortium</u>		Kenya
<u>Kenya Airport Authority</u>		Kenya
<u>Kenya Alliance of Resident Associations</u>	KARA	Kenya
<u>Kenya College of Communications Technology</u>		Kenya
<u>Kenya Debt Relief Network</u>	KENDREN	Kenya

<u>Kenya Energy and Environment Organizations</u>	KENGO	Kenya
<u>Kenya Flower Council</u>		Kenya
<u>Kenya Forestry Research Institute</u>		Kenya
<u>Kenya Institute of Management</u>		Kenya
<u>Kenya Law Reform commission</u>	KLRC	Kenya
<u>Kenya Library Association</u>		Kenya
<u>Kenya Marine and Fisheries Research Institute</u>	KMFRI	Kenya
<u>Kenya Medical Research Institute</u>		Kenya
<u>Kenya Methodist University</u>	KEMU	Kenya
<u>Kenya National Archives</u>		Kenya
<u>Kenya National Farmers Union</u>	KNFU	Kenya
<u>Kenya National Union of Teachers</u>		Kenya
<u>Kenya One World Link Forum</u>	KOWL	Kenya
<u>Kenya Polytechnic. School of Professional Studies</u>		Kenya
<u>Kenya Resource Centre for Indigenous Knowledge</u>	KENRIK	Kenya
<u>Kenya School Improvement Project</u>	KENSIP	Kenya
<u>Kenya School of Professional Studies</u>		Kenya
<u>Kenya Trypanosomiasis Research Institute</u>		Kenya
<u>Kenyan Book Foundation</u>	KBF	Kenya
<u>Kenyatta University</u>	KU	Kenya
<u>Kiriri Women's University of Science and Technology</u>	KWUST	Kenya
<u>Learning and Development Kenya</u>		Kenya
<u>Life & Peace Institute</u>	LPI	Kenya
<u>Lighthouse For Christ Eye Centre</u>		Kenya
<u>Local Resource Initiative</u>		Kenya
<u>MAA Development Association</u>		Kenya
<u>Maseno University</u>		Kenya
<u>McMillan Library</u>		Kenya
<u>Mindolo Ecumenical Foundation</u>		Kenya
<u>Ministry of Health</u>	M.O.H	Kenya

<u>Missionary Sisters of Our Lady of Africa</u>	MSOLA	Kenya
<u>Moi University</u>		Kenya
<u>Moi University</u>	MU	Kenya
<u>Mya & Ryan</u>	MR	Kenya
<u>Nairobi Hospital Library</u>		Kenya
<u>Nairobi Peace Initiative</u>	NPI-Africa	Kenya
<u>National Council for Science and Technology</u>	NCST	Kenya
<u>National Council of NGOs</u>		Kenya
<u>National Council of NGOs</u>		Kenya
<u>National Legislation support Institute</u>	NASI	Kenya
<u>National Museums of Kenya</u>	NMK	Kenya
<u>NET Reach</u>		Kenya
<u>Netreach Programme</u>		Kenya
<u>NETWAS International</u>		Kenya
<u>Obwocha & Associates</u>		Kenya
<u>Ocean Data and Information Network for Africa</u>	ODINAFRICA	Kenya
<u>Office for the Coordination of Humanitarian Affairs</u>	OCHA	Kenya
<u>Organic Matter Management Network</u>		Kenya
<u>OXFAM - Kenya</u>	OXFAM	Kenya
<u>Pact Kenya</u>	PACT	Kenya
<u>Participatory Methodologies Forum of Kenya</u>	PAMFORK	Kenya
<u>Peace Tree network</u>	PTN	Kenya
<u>Plan International - Kenya</u>		Kenya
<u>Plan Kenya</u>	PLAN	Kenya
<u>Rahimtulla Trust Library</u>		Kenya
<u>Regional AIDS Training Network</u>	RATN	Kenya
<u>Regional Centre for Services in Surveying, Mapping and Remote Sensing</u>	RCSSMRS	Kenya
<u>Regional Information Center on Local Governance (Eastern Africa)</u>	RIC	Kenya
<u>RELMA in ICRAF</u>		Kenya

<u>Rockefeller Foundation</u>		Kenya
<u>Rural Development Agencies</u>		Kenya
<u>Rural Extension with Africa's Poor</u>	REAP	Kenya
<u>Rural-Kenya World Cultural Link</u>	CULINKE	Kenya
<u>Sacred Africa - Sustainable Agriculture for Research and Development in Africa</u>		Kenya
<u>School of Environmental Studies</u>		Kenya
<u>Smart Initiative</u>		Kenya
<u>Social Development Network</u>	SODNET	Kenya
<u>Social Needs Network</u>		Kenya
<u>Social Science and Medicine Africa Network</u>		Kenya
<u>Society for International Development - Kenya Chapter</u>	SID	Kenya
<u>Somali Organisation for Community Activities</u>	SOCDA	Kenya
<u>St Lucia Community Health Project</u>		Kenya
<u>St. Paul's United Theological College</u>		Kenya
<u>Strathmore University</u>		Kenya
<u>Sub-Saharan Africa Forest Genetic Resources Network</u>	SAFORGEN	Kenya
<u>Sudan Catholic Bishops' Regional Conference</u>	SCBRC	Kenya
<u>Tea Research Foundation of Kenya</u>		Kenya
<u>The Kenya Institute for Public Policy Research and Analysis</u>	KIPPRA	Kenya
<u>The National Council of Churches of Kenya</u>		Kenya
<u>Tradewatch Africa</u>		Kenya
<u>Transparency International Kenya</u>	TI	Kenya
<u>Trees On-Farm Network</u>	TOFNET	Kenya
<u>Trócaire (East Africa Regional Office)</u>		Kenya
<u>United States International University</u>	USIU	Kenya
<u>University of Eastern Africa, Baraton</u>	UEAB	Kenya
<u>University of Nairobi</u>	UON	Kenya
<u>University of Nairobi</u>	UON	Kenya

<u>Volunteer Services Overseas</u>	VSO	Kenya
<u>War-Torn Societies</u>		Kenya
<u>Western University of Science and Technology</u>	WEUCO	Kenya
<u>Winrock International</u>		Kenya
<u>World Agroforestry Centre</u>	ICRAF	Kenya
<u>World Vision International</u>		Kenya
<u>World Vision International</u>	WVI	Kenya
<u>Youth Community for Global Connection</u>	YKOM	Kenya
 Government		
		Kenya
<u>Africa Recovery Team</u>		Kenya
<u>Association of Local Governments Authorities of Kenya</u>	ALGAK	Kenya
<u>Attorney-Generals Chambers</u>		Kenya
<u>British Council Kenya</u>		Kenya
<u>British High Commission in Kenya</u>		Kenya
<u>Canadian High Commission to Kenya and Uganda</u>		Kenya
<u>Civil Service Reform Secretariat</u>	CSRS	Kenya
<u>Department for International Development</u>	DFID	Kenya
<u>Department of Adult Education</u>	DAE	Kenya
<u>Deutsche Gesellschaft für Technische Zusammenarbeit</u>	GTZ	Kenya
<u>Directorate of Personnel Management</u>		Kenya
<u>Embassy of Denmark to Kenya</u>		Kenya
<u>Embassy of Eritrea to Kenya</u>		Kenya
<u>Embassy of Italy to Kenya</u>		Kenya
<u>Embassy of Portugal to Kenya</u>		Kenya
<u>Embassy of Sweden to Kenya</u>		Kenya
<u>Embassy of the Netherlands to Kenya</u>		Kenya
<u>Export Processing Zone Authority</u>		Kenya

<u>Hon. Consul of the New Zealand Government to the Republic of Kenya</u>		Kenya
<u>Institute for Education in Democracy</u>	IED	Kenya
<u>Kenya Government</u>		Kenya
<u>Kenya Institute of Administration</u>	KIA	Kenya
<u>Kenya Management Assistance Programme</u>	KMAP	Kenya
<u>Kenya National Assembly</u>		Kenya
<u>Kenya National Library Services</u>	KNLS	Kenya
<u>Kenya Revenue Authority</u>	KRA	Kenya
<u>Kenya Revenue Authority</u>		Kenya
<u>Kenya Wildlife Service</u>	KWS	Kenya
<u>Localising Agenda 21</u>	LA21-Nakuru	Kenya
<u>Ministry of Agriculture</u>		Kenya
<u>Ministry of East African and Regional Co-operation</u>		Kenya
<u>Ministry of Finance</u>		Kenya
<u>Ministry of Foreign Affairs and International Co-operation</u>		Kenya
<u>Ministry of Foreign Affairs Government of Belgium</u>		Kenya
<u>Ministry of Livestock and Fisheries Development</u>		Kenya
<u>Ministry of Local Authorities</u>		Kenya
<u>Ministry of Local Government</u>		Kenya
<u>Ministry of Planning and National Development</u>		Kenya
<u>Ministry of Research Technical Training and Technology</u>		Kenya
<u>Ministry of Rural Development</u>		Kenya
<u>Ministry of Tourism and Information</u>		Kenya
<u>Ministry of Tourism and Wildlife</u>		Kenya
<u>Ministry of Trade and Industry</u>		Kenya
<u>Ministry of Trade and Industry</u>		Kenya
<u>Ministry of Trade and Industry</u>	MOTI	Kenya
<u>Ministry of Trade and Industry</u>		Kenya

<u>Ministry of Trade and Industry</u>		Kenya
<u>Ministry of Transport and Communications</u>		Kenya
<u>Ministry of Health</u>		Kenya
<u>Mombasa Municipal Council</u>	MMC	Kenya
<u>Municipal Council of Nakuru</u>	MCN	Kenya
<u>Municipal Development Partnership Regional office for Eastern Africa</u>	MDP	Kenya
<u>Nairobi City Council</u>	NCC	Kenya
<u>Office of the President</u>		Kenya
<u>Office of the Vice President and Ministry of Finance</u>		Kenya
<u>Permanent Presidential Commission on Soil Conservation and Afforestation</u>		Kenya
<u>SNV Kenya</u>	SNV	Kenya
<u>Tea Board of Kenya</u>		Kenya
<u>Treasury</u>		Kenya
<u>United States Agency for International Development</u>	USAID	Kenya
<u>WAC Dandora</u>		Kenya
<u>Water Services Regulatory Board</u>	WSRB	Kenya
Intergovernmental		
<u>African Association for Public Administration and Management</u>	AAPAM	Kenya
<u>African Centre for Technology Studies</u>	ACTS	Kenya
<u>African Regional Organisation for Standardisation</u>	ARSO	Kenya
<u>African Trade Insurance Agency</u>	ATI	Kenya
<u>Delegation of the European Commission in the Republic of Kenya</u>		Kenya
<u>European Community Humanitarian Office</u>	ECHO	Kenya
<u>Intergovernmental Oceanographic Commission - Kenya</u>	IOC	Kenya
<u>International Labour Organisation - Advisory Support, Information Services and Training</u>	ILO-ASIST	Kenya
<u>Kenya Commercial Bank Limited</u>	KCB	Kenya

<u>New Partnership for Africa's Development</u>	NEPAD	Kenya
<u>Trade Negotiations Support Programme Under Kenya-European Union Post Lomé Trade Programme</u>	KEPLOTTRADE	Kenya
<u>UN Human Settlements Programme</u>	UN-HABITAT	Kenya
<u>UNICEF Kenya Country Office. Documentation Centre</u>		Kenya
<u>United Nations Centre for Human Settlements</u>	UN	Kenya
<u>United Nations Development Fund for Women</u>	UNDP	Kenya
<u>United Nations Development Programme for Somalia</u>	UNDP	Kenya
<u>United Nations Educational, Scientific and Cultural Organization</u>	UNESCO	Kenya
<u>United Nations Embassy Nairobi</u>	UNDP	Kenya
<u>United Nations Environment Programme</u>	UNEP	Kenya
<u>United Nations High Commissioner for Refugees</u>	UNHCR	Kenya
<u>United Nations International Childrens Emergency Fund - Eastern and Southern Africa</u>	UNICEF	Kenya
<u>World Bank - Regional Mission in Eastern Africa</u>	IBRD	Kenya
<u>World Health Organisation</u>	WHO	Kenya
 Media		
<u>African Journal of Medical Practice</u>		Kenya
<u>Association of Food and Agriculture Journalists</u>	AFAJ	Kenya
<u>Catholic Information Service for Africa</u>	CISA	Kenya
<u>East African Educational Publishers</u>		Kenya
<u>East African Medical Journal</u>		Kenya
<u>Friends of the Book Foundation</u>		Kenya
<u>Kelias News</u>		Kenya
<u>Kenya Booksellers Association</u>		Kenya
<u>Kenya Television Network</u>		Kenya
<u>Lake Publishers and Enterprises Ltd</u>		Kenya

<u>Legacy Books</u>		Kenya
<u>Longman Kenya</u>		Kenya
<u>Society of African Journal Editors</u>	SAJE	Kenya
<u>The Standard</u>		Kenya
<u>Topic Africa</u>		Kenya
 <u>Private Sector</u>		
		Kenya
<u>African Development and Industrial Promotion Consultants</u>	ADIP	Kenya
<u>Almaco Management Consultants Ltd.</u>	AMC	Kenya
<u>Association of African Management Consultants</u>	AAMCO	Kenya
<u>Global Economic Investments & Financial Consultancy Ltd</u>	GEIFIC	Kenya
<u>K-Rep Bank Limited</u>		Kenya
<u>Kenya Association of Manufacturers</u>		Kenya
<u>Kenya National Chamber of Commerce & Industry</u>	KNCCI	Kenya
<u>Kenya National Chamber of Commerce & Industry</u>		Kenya
<u>Kenya Railways</u>		Kenya
<u>KPMG Management Consulting</u>	KPMG	Kenya
<u>Midafrica Technologies</u>	Midafrica	Kenya
<u>PassNet Consultants Ltd.</u>		Kenya
<u>Policy Solutions</u>		Kenya
<u>Port Management Association of Eastern and Southern Africa</u>	PMAESA	Kenya
<u>PPD Consultants Ltd</u>	PPD Consultants	Kenya
<u>Pricewaterhouse Coopers</u>		Kenya
<u>Solid Investment Securities Limited</u>		Kenya
<u>South Consulting</u>		Kenya
<u>The Eastern & Southern Africa Comesa Insight</u>	Comesa	Kenya
<u>Todays Online</u>		Kenya
<u>Tourist consultant Kenya</u>		Kenya

Toyota East Africa Ltd

Kenya

Trackspa Limited

Kenya

APPENDIX D

List of the licensed TV and FM stations found in Kenya

2.4.1 TELEVISION BROADCASTERS

Private TV Broadcasters

NO	NAME & ADDRESS OF BROADCASTER	PHYSICAL LOCATION	TV CHANNEL
1	KTN Baraza Ltd. P.O. Box 56985, Nairobi Tel. 227122, 339380 Fax 214467	Nyayo House, 20th Floor Nairobi	Nairobi : 59 Nairobi : 62 Eldoret: 57 Mazeras : 12 Nakuru : 58 Kisumu : 61
2	STV Holdings Ltd. PO Box 20190 Nairobi Tel: 712982/2/4/5/6/7 Fax : 713146	NSSF Building 24th Floor Nairobi	Nairobi : 56 Mombasa : 53 Kisumu : 30 Nakuru : 54 Machakos : 55 Nyeri : 43 Eldoret : 37
3	African Broadcasting Ltd. (Nation Media Group) P.O. Box 49010, Nairobi Tel. 337710, 221222 Fax 217112, 215611	Nation House Nairobi	Nairobi: 42
4	Sauti ya Rehema RTV Network P.O. Box 4139 Eldoret Tel. Fax :		Eldoret : 34

2.4.2 PUBLIC NATIONAL TV BROADCASTER

KENYA BROADCASTING CORPORATION (KBC)

LOCATION	VHF/UHF TV CHANNEL
Nairobi	4
	23
	26
	29
	31
Mombasa	6
	22
	25
	28
Nyeri	10
Kisumu	49

	52
	55
Meru	11
	5
Malindi	41
	44
Nakuru	6
Timboroa	2
Webuye	9

2.4.3 SOUND BROADCASTERS

Private sound broadcasters

NO	NAME & ADDRESS OF BROADCASTER	PHYSICAL LOCATION	FM FREQUENCY (MHz)
1	Sauti ya Rehema RTV Network P.O. Box 4139, Eldoret Tel. 0321-33711 Fax: 0321- 62130	Eldoret	Eldoret : 98.8
2	Capital Group Ltd. (Capital FM) P.O. Box 74933, Nairobi Tel. 210020 Fax: 334735/332349	19th Floor Lonhro House Nairobi	Nairobi : 98.4
3	IQRA Broadcasting Network P.O. Box 45163, Nairobi Tel. 447624 Fax: 243109/443978	Biashara Street Islamia Building Nairobi	Nairobi : 95.1
4	Universal Entertainment P.O. Box 39023, Nairobi Tel. 748594 Fax :not available	Mombasa	Mombasa : 91.5
5	Regional Reach Broadcasting Ltd. (Kameme FM) P.O. Box 49640, Nairobi Tel. 217963/ Fax 338129	Longonot place, 3rd Floor Kijabe street Nairobi	Nairobi : 101.1 Nyeri : 92.3
6	Feba Radio (Baraka FM) P.O. Box 49262, Nairobi Tel. 574306/575361 Tel: 011-224410 Fax: not available	Kayawe Road Off Denis Pritt Road, Nairobi	Mombasa : 95.5
7	African Broadcasting Ltd. (Nation FM) P.O. Box 49010, Nairobi Tel. 337710, 221222 Fax 217112, 215611	Nation House Nairobi	Nairobi : 96.4

8	Stangy Boyz Promotionz P.O. Box 12505, Nairobi Tel. 219220 Fax 216160		View Park Towers 21st Floor Nairobi	Nairobi: 88.0 Mombasa: 89.9
9	Biblia Husema Studios P.O. Box 45019 Nairobi Tel. 728304/711686 Fax: not available		Upper Hill Road Nairobi	Nairobi: 90.9 Timboroa: 101.5 Machakos: 96.9
10	Radio Africa Ltd (Kiss FM) P.O.Box 45897 Nairobi Tel: 245368, 447411 Fax : 245565		Hazina Towers, 16th Floor University, Nairobi	Nairobi : 100.3 Kisumu: 92.6 Eldoret: 89.2 Mombasa: 88.5
11	BBC World Service P.O. Box 58621, Nairobi Tel. 214437, 229110 Fax 214435		Longonot Place, 5th Floor Kijabe street Nairobi	Nairobi : 93.7 Mombasa: 93.9 Timboroa: 88.2
12	Future Tech Electronics Ltd P.O. Box 35291 00100 Nairobi Tel. (02)537733 /542610 Fax :		Baricho Road 1st Choice Building	Nairobi: 103.9
13	International Childrens Mission P.O. Box 12951 Nakuru Tel/Fax :037851570		Nakuru	Nakuru: 105.3
14	International Broadcasting Bureau Voice of America Worldnet 330 Independence avenue, SW Washington DC 20237 USA Tel :+12022050205 Fax : +12024011494			Nairobi: 107.5
15	Radio One LTD (IPP) P.O. Box 163 Dar Es Salaam Tel: +255-22-219349 Fax: +255-22-21-219360		Rahimtulla Building	Nairobi: 94.7
16	Lingam Enterprises Ltd P.O. Box 32295 Nairobi Tel :531560 Fax : 531560		Baricho Road Ellies Building	Nairobi: 106.0

17	Nairobi Pentecostal Church. P.O. Box 42254 Nairobi Tel.722092/727608/723208 Fax : 722418	Valley Road	Nairobi : 104.4
18	Worldspace Kenya Ltd P.O. Box 43417 Nairobi Tel. 713717 Fax : 713703	Rahimtulla Trust Towers, 2nd Floor Upper Hill Road	Digital Audio Broadcasting signals from AFRIBSS satellite in the frequency band 1467-1492 MHz

2.4.4 NATIONAL PUBLIC SOUND BROADCASTER (FM Sound)

FM Sound	
LOCATION	FM SOUND FREQUENCY (MHz)
Nairobi	91.9
	92.9
	95.6
	101.9
Mombasa	89.1
	104.4
Nyeri	100.7
	97.0
	87.6
	102.3
Kisumu	100.9
Meru	90.4
Timboroa	91.5
	98.0

2.4.5 Medium wave Sound

LOCATION	MEDIUM FREQUENCY (Khz)	WAVE
Nairobi	612	
	747	
	1269	
Voi	540	
	980	
Kitale	882	
	1134	
Nandi Hills	558	
Meru	702	
	900	
Maralal	1107	
	1386	
Marsabit	675	
	1233	

Wajir	1152 1305
Malindi	927 1044
Garissa	567 639
Yala	846 954

APPENDIX E

RESEARCH PERMIT AND REQUEST LETTERS TO INSTITUTIONS SURVEYED

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss ALICE WAFULA KWAKEResearch Permit No. MOEST 15/2001/35CDate of issue 7th January, 2005Fee received Shs. 1000of (Address) MOL UNIVERSITYP.O. BOX 5900, ELDORET

has been permitted to conduct research in _____

Location,

TRANSWOLA

District,

RIFT VALLEY

Province,

on the topic INFORMATION COMMUNICATIONTECHNOLOGIES FOR WOMEN IN RURALDEVELOPMENT A COMPARATIVE STUDY FOR KENYA& SOUTH AFRICAfor a period ending 30th March 2005Applicant's
Signature

 Permanent Secretary
 Ministry of Education,
 Science and Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two (2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.



REPUBLIC OF KENYA

RESEARCH CLEARANCE
PERMIT

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

Telegrams: "EDUCATION", Nairobi

Telephone: Nairobi 334411

When replying please quote

Ref. No.

and date

MOEST 13/001/35C 7/2



JOGOO HOUSE "B"
HARAMBEE AVENUE
P.O. Box 30040-00100
NAIROBI
7th January, 2005, 20.....

Alice Wafula Kwake
Moi University
P.O. BOX 3900
ELDORET

Dear Madam

RE: RESEARCH AUTHORISATION

Please refer to your application for authority to conduct research on "Information Communication Technologies for Women in Rural Development" A comparative study for Kenya and South Africa".

This is to inform you that you have been authorised to conduct research in TransNzoia District for a period ending 30th March, 2005. You are advised to report to the District Commissioner and the District Education Officer, TransNzoia District before embarking on your research project.

Upon completion of your research, you are expected to submit two copies of your research report to this Office.

Yours faithfully

A handwritten signature in black ink, appearing to read 'B.O. Adewa', written over a printed name and title.

B.O. ADEWA

FOR: PERMANENT SECRETARY

Cc

The District Commissioner
TransNzoia

The District Education Officer
TransNzoia District

University of
Zululand



✉ P/Bag X1001, Kwadlangezwa,
3886

☎ (035) 902 6481/2/3/4

f (035) 902 6082

Department of Library and Information Science

To Whom It May Concern:

11 October 2004

Questionnaire on ICTs and Women

This serves to introduce Mrs Veli Jiyane and Mrs. Alice Kwake who are both staff and students from the University of Zululand respectively

The above mentioned staff and student are conducting research in the Faculty of Arts, Department of Library and Information Services on Use of Information and Communication Technologies by rural women in KZN

We would appreciate any services and assistance offered to them.

Kind regards,

A handwritten signature in black ink, appearing to read 'D.N. Ocholla', followed by a horizontal line.

*Professor D.N. Ocholla,
Head of Department, Library and Information Science.*

APPENDIX F

LIST OF LOCAL LOOP OPERATORS IN KENYA

LOCAL LOOP OPERATORS

Sourced from the Communications Commission of Kenya
(2005:1-2)

www.cck.go.ke/llo_consultative.pdf -

The Commission started the licensing of LLOs in 2002 culminating to the licensing of ten (10) operators to date, namely:

1. African Link Agency Ltd
2. Em Communications
3. Flashcom Limited
4. Genco Limited
5. Kenya Data Networks Ltd
6. Pace Systems Limited
7. Pneumatics Kenya Limited
8. Satellite Data Networks (K) Limited
9. Serengeti Telecommunications Ltd
10. Soliton Systems House Limited

Appendix G

NGO FRAMELIST FOR SOUTH AFRICA

South African NGOs on the Web

As PRODDER evolves and in building up our knowledge of the South African NGO sector to feed into the forthcoming online database, SANGONeT has compiled a comprehensive list of NGO websites. The purpose of this listing is to give you access to information about the South African NGO sector, as an interim measure while we develop the PRODDER database. This alphabetical list is not exhaustive and will be updated on a regular basis.

Should you wish to submit your NGO's web link, for more information on the new PRODDER service, to share your comments and expectations with us in support of this new initiative as well as to indicate your interest in listing your organisation's details on the forthcoming PRODDER database, please contact Julie Machin, PRODDER senior information coordinator, SANGONeT. Tel: 011 403 4935 or email: prodder@sangonet.org.za.

Kindly note that SANGONeT is not responsible for the integrity of the information on the individual NGO websites.

ACFS Community Education and Feeding Schemewww.acfs.org.za

Abalimi Bezekhayawww.abalimi.org.za

Adoption Society - Margaret Housewww.adoptions.org.za/

Adult Learning South Africawww.aldsa.org.za

African Centre for the Constructive Resolution of Conflicts (ACCORD)www.accord.org.za

Africa Foundationwww.africafoundation.org

Africa Heritage Societywww.africaheritage.com

Africa Institute of South Africawww.ai.org.za

Africa-America Institute (AAI)www.aaisa.org.za

African Gamebird Research, Education and Development Trustwww.agred.org.za

Agendawww.agenda.org.za

Aid for Romanian Childrenwww.a-r-c.co.za

AIDS Consortiumwww.aidsconsortium.org.za

AIDS Foundation of South Africawww.aids.org.za

AIDS Help Internationalwww.aidshelp.co.za

AIDS Law Projectwww.alp.org.za

AIDSLINK www.aidslink.org.za

Alexsan Kopano Educational Trust www.alexankopano.org.za

Access to learning materials in Southern Africa www.aces.org.za

Alternative Information and Development Centre (AIDC) www.aidc.org.za

Amnesty International South Africa www.amnesty.org.za

Angels Against Crime www.angelsagainstcrime.co.za

Anti-Privatisation Forum (APF) www.apf.org.za

Arepp - Theatre for Life www.arepp.org.za / www.at.artslink.co.za/~arepp/intro.htm

Artists for Human Rights Trust www.ahr.org.za

Arts and Culture Trust www.act.org.za

Arynan Benevolent Home Council www.abh.org.za

Ashoka www.ashoka.org.za

Association of Round Tables of Southern Africa www.roundtable.org.za

Association for Rural Advancement (AFRA) www.afra.co.za

Association for the Physically Disabled (APD) Greater Johannesburg www.apdjhbc.co.za/

Association for Water and Rural Development (AWARD) www.award.org.za

Bag Factory www.bagfactoryart.org.za

Basic Income Grant Coalition (BIG) www.big.org.za

BAT Centre www.batcentre.co.za

Behind the Mask www.mask.org.za

Bergzicht Training Centre www.bergzicht.org.za

Beth Uriel Home www.bethuriel.co.za

Biblione South Africa www.biblione.org.za

Biowatch South Africa www.biowatch.org.za

Birdlife South Africa www.birdlife.org.za

Black Sash www.blacksash.org.za

Breadline Africa www.breadlineafrica.org.za

Brotherhood of Blessed Gérard www.bbg.org.za

Business and Arts South Africa (BASA) www.basa.co.za

Business Against Crime (BAC) www.bac.org.za

Business Opportunities Network (BON) www.bon.co.za

Business Trust www.btrust.org.za

Cancer Association of South Africa (CANSA) www.cansa.org.za

Cape Flats Development Association (CAFDA) www.cafda.org.za

Cape Town Child Welfare www.helpkids.org.za/

Cape Town Heritage Trust www.heritage.org.za

Catholic Welfare and Development www.cwd.org.za

Cato Manor Development Project www.cmda.org.za

Ceasefire Campaign www.ceasefire.org.za

Centre for Development and Enterprise (CDE) www.cde.org.za

Centre for Early Childhood Development (CECD) www.cecd.org.za

Centre for Policy Studies (CPS) www.cps.org.za

Centre for Public Participation www.cpp.org.za

Centre for Rural Legal Studies (CRLS)www.crls.org.za

Centre for the Study Violence and Reconciliation (CSVr)www.csvr.org.za

Centre for Youth Developmentwww.cyd.org.za

Child Accident Prevention Foundation of South Africa (CAPFSA)www.childsafe.org.za

Child Abuse Action Groupwww.caag.org.za

Child Justice Alliancewww.childjustice.org.za

Childlinewww.childline.org.za

Children Firstwww.childrenfirst.org.za

Children of Firewww.childrenoffire.org

Children of the Dawnwww.childrenofthedawn.org.za/

Children's Hospital Trustwww.childrenshospitaltrust.org.za

Children's Rights Centrewww.childrensrightscentre.co.za

CHOC Childhood Cancer Foundationwww.choc.org.za

Christ Healing Fellowshipwww.chf.org.za

Claude Leon Foundationwww.leonfoundation.co.za

Community Agency for Social Enquiry (CASE)www.case.org.za

Community Development Resource Association (CDRA)www.cdra.org.za

Community Law Centrewww.communitylawcentre.org.za

Community Microfinance Networkwww.cmfnet.org.za

Community Organisation Urban Resource Centre (CO-URC)www.courc.org.za

Connectionswww.connectionsafrica.org.za

Contact Trustwww.contacttrust.org.za

COPE Housing Association www.cope.org.za

Cotlands www.cotlands.org

Creative Research Education And Training Enterprise South Africa (CREATE SA) www.createsa.org.za

Daktari Wildlife Orphanage <http://africanorphanage.com> Dance for All www.danceforall.co.za

Delta Environmental Centre www.deltaenviro.org.za

Democracy Development Programmew www.ddp.org.za

Desmond Tutu Peace Centre www.tutu.org

Development Action Group (DAG) www.dag.org.za

Development Institute for Training, Support and Education for Labour (DITSELA) www.ditsela.org.za

Diakonia Council of Churches www.diakonia.org.za

Diketso Eseng Dipuo Community Development Trust (DEDI) <http://www.dedi.co.za>

Direct Access Centre for Peace and Memory www.dacpm.org.za

Disabled People South Africa www.dpsa.org.za

Donald Gordon Foundation www.donaldgordon.org

Dorcas Aid Southern Africa www.dorcas.co.za

Drive Alive www.drivealive.org.za

Durban Lesbian & Gay Community & Health Centre www.gaycentre.org.za

e-Schools Network www.esn.org.za

Early Learning Resource Unit (ELRU) www.elru.co.za

Eco-Access www.eco-access.org

Economic Policy Research Institute (EPRU) www.epri.org.za

Ecumenical Service for Socio-Economic Transformation (ESSET)www.esset.org.za

Education and Training Unit (ETU) for Democracy and Developmentwww.etu.org.za

Elardo Park Women's Forumwww.epwf.org.za

Electoral Institute of Southern Africa (EISA)www.eisa.org.za

Empowerment for African Sustainable Development (EASD)www.easd.org.za

Endangered Wildlife Trust (EWT)www.ewt.org.za

Engenderwww.engender.org.za

Environmental Justice Networking Forum (EJNF)www.ejnf.org.za

Environmental Monitoring Group (EMG)www.emg.org.za

Epicentre AIDS Management Foundationwww.epicentre.org.za

Epilepsy South Africawww.epilepsy.org.za

Epilepsy South Africa Western Capewwww.epilepsywc.org.za

eSimphiwe Transitional Home for Abandoned Babieswww.esimphiwe.co.za

Ethics Institute of South Africawww.ethicsa.org

F W De Klerk Foundationwww.fwdklerk.org.za

Fair Trade in Tourism South Africawww.fairtourismsa.org.za

Family and Marriage Society of South Africa (FAMSA)www.famsa.org.za

Feedbackwww.feedback.org.za

FeedSAwww.feedsa.co.za

Field Band Foundationwww.fieldband.org.za

Film Resource Unitwww.fru.co.za

FinMark Trustwww.finmarktrust.org.za

Flower Valley Conservation Trust www.flowervalley.org.za

Food and Trees for Africa www.trees.org.za

Food Gardens Foundation www.foodgardensfoundation.org.za

Fossil Fuel Foundation of Africa www.fossilfuel.co.za

Foundation for Contemporary Research (FCR) www.fcr.org.za

Foundation for Human Rights (FHR) www.fhr.org.za

Freedom of Expression Institute (FXI) www.fxI.org.za

French Institute of South Africa www.ifas.org.za

Friedrich Ebert Stiftung (FES) www.fes.org.za

Friedrich Naumann Foundation Africa www.africa.fnst.org

Gender AIDS Forum www.gaf.org.za

Gender Advocacy Programme (GAP) www.gender.co.za

Gender Education and Training Network (GETNET) www.getnet.org.za

Genderlinks www.genderlinks.org.za

German Development Service (DED) www.ded.co.za

Gift of the Givers Foundation www.giftofthegivers.co.za

Girl Guides Association of South Africa www.girguides.org.za

Girls and Boys Town South Africa www.gbtown.org.za

Giving and Sharing www.givingandsharing.org.za

Global Equity Gauge Alliance www.gega.org.za

Goedgedacht Forum for Social Reflection www.goedgedacht.org.za

Greater Middelburg Housing Association www.gmha.co.za

Greatmore Studios www.greatmoreart.org

GRIP www.grip.org.za

Green Network www.greennetwork.org.za

Groundwork www.groundwork.org.za

Group for Environmental Monitoring (GEM) www.gem.org.za

Gun Control Alliance www.gca.org.za

Habitat for Humanity - South Africa www.habitat.org.za

Harold Wolpe Memorial Trust www.wolpetrust.org.za

Health Systems Trust (HST) www.hst.org.za

Heart Foundation South Africa www.heartfoundation.co.za

Heartbeat Centre for Community Development www.heartbeat.org.za

Heifer International South Africa www.heifer.org.za

Heinrich Boell Stiftung www.boell.org.za

Helen Suzman Foundation www.hsf.org.za

Highway Hospice Association www.hospice.co.za

HIV/AIDS Awareness Project and Youth Development www.hapyd.org

Hiv Outreach Programme and Education (HOPE) www.h-o-p-e.net

HIVAN - Centre for HIV/AIDS Networking www.hivan.org.za

HIVSA <http://www.hivsa.org.za/>

Homes for Kids in South Africa (HOKISA) www.hokisa.co.za

HOPE Africa www.hopeafrica.org.za

Hospice Pretoria www.hospice.org.za

Human Rights Institute of South Africa (HURISA) www.hurisa.org.za

Ilitha Labantu www.ilithalabantu.org.za

Institute for Democracy in South Africa (IDASA) www.idasa.org.za

Institute for Global Dialogue (IGD) www.igd.org.za

Institute for Healing of Memories www.healingofmemories.co.za

Institute for Justice and Reconciliation www.ijr.org.za

Institute for Primary Health www.iph.org.za

Institute for Security Studies (ISS) www.iss.org.za

Institute for the Advancement of Journalism www.iaj.org.za

Institute of Natural Resources (INR) www.inr.unp.ac.za

Interfund www.interfund.org.za

Inyathelo - The South African Institute for Advancement www.inyathelo.co.za/

Isandla Institutew www.isandla.org.za

Isibane www.isibane.co.za

Johannesburg Child Welfare Society www.jhbchildwelfare.org.za

Joint Education Trust (JET) www.jet.org.za

Joint Enrichment Project (JEP) www.jep.org.za

Joseph Project www.josephproject.org.za

Junior Achievement South Africa www.jasa.co.za

Justice for Animals www.justiceforanimals.co.za

Kagisong Home of Peace www.kagisong.org.za

Kenosis Community www.kenosiscommunity.org.za

Khanya College www.khanyacollege.org.za

Khanya Managing Rural Change www.khanya-mrc.co.za

Khulisaw www.khulisaservices.co.za

Khulumani Support Group www.khulumani.net

Khuphuka Technical Training and Business Development www.khuphuka.org.za

Kidzpositive Family Fund www.kidzpositive.org

Knysna AIDS Council www.knysna-aids.org.za

Kolping Society of South Africa www.kolpingsa.co.za

Konrad Adenauer Stiftung www.kas.org.za

Kurland Community Development Forum (KCDF) www.wvisa.co.za/kurland

Kwa-Zulu Natal Development Foundation www.kzndf.co.za

KwaZulu-Natal Rural Development Network www.midnet.org.za

Lambano Sanctuary www.lambano.org.za/

Land Access Movement of South Africa (LAMOSA) www.nlc.co.za/lamosa

Lawyers for Human Rights (LHR) www.lhr.org.za

Legal Entity Assessment Project (LEAP) www.leap.org.za

Legal Resources Centre (LRC) www.lrc.org.za

Lesbian and Gay Equality Project www.equality.org.za

LHC Foundation www.lhcfoundation.org/

Lifeline Southern Africa www.lifeline.org.za

Living Waters www.livingwaters.org.za/

loveLifewww.lovelife.org.za

Mass Media Projectwww.mmp.org.za

Marine Environmental Education Trustwww.meet.org.za

Media Monitoring Project www.mediamonitoring.org.za

Micro Enterprise Alliancewww.mea.org.za

Missionaries of the Sacred Heartwww.misacor.org.za

Moving Into Dance Mophatongwww.midance.co.za

Mpumalanga Children SAwww.mpumalangachildrensa.co.za/

Nadel Human Rights and Advocacy Projecthttp://sunsite.wits.ac.za/nadelproject/

National Arts Council (NAC)www.nac.org.za

National Association of Broadcasters (NAB)www.nab.org.za

National Association of Social Housing Organisations (NASHO) www.nasho.org.za

National Community Radio Forum (NCRF)www.ncrf.org.za

National Community Water and Sanitation Training Institutewww.ncwsti.co.za

National Consumer Forumwww.ncf.org.za/

National Institute for Crime Prevention and the Reintegration of Offenders (NICRO)www.nicro.org.za

National Institute for Economic Policy (NIEP)www.niep.org.za

National Labour and Economic Development Institute (NALEDI)www.naledi.org.za

National Land Committee (NLC)www.nlc.co.za

National Sea Rescue Institute (NSRI)www.nsri.org.za

Nelson Mandela Children's Fund (NCRF)www.ncrf.co.za

Nelson Mandela Foundation www.nelsonmandela.org

NALEDI www.naledi.org.za

NISAA Institute for Women's Development www.nisaa.org.za

Nkuzi Development Agency www.nkuzi.org.za

Non-Profit Consortium (NPC) www.npc.org.za

Noordhoek Environmental Action Group www.neag.org.za

Oasis Association www.oasis.org.za

Open Democracy Advice Centre (ODAC) <http://www.opendemocracy.org.za/>

Open Learning Systems Education Trust (OLSET) www.olset.org.za

Open Society Foundation of South Africa www.osf.org.za

Operation Bobbi Bear www.bobbibear.org.za

ORT South Africa www.ortsa.org.za

Order of St John www.stjohn.org.za

Organ Donor Foundation of Southern Africa www.organdonor.org.za

Parents for Children www.parents-for-children.org

Parliamentary Monitoring Group (PMG) www.pmg.org.za

Participatory Development Initiative www.pdi.org.za

Partnership With Afterschool Care Projects www.pascap.org.za

Peace Parks Foundation www.peaceparks.org

People Opposing Women Abuse (POWA) <http://www.powa.co.za>

Phaphama <http://www.phaphama.org.za>

Planact www.planact.org.za

Playgrounds for Africa www.playgroundsforafrica.org

Positive Women's Network www.pwn.org.za

PPASA South Africa www.ppasa.org.za

Primary Immunodeficiency Network of South Africa (PINSAs) www.pinsa.org.za

Programme for Technological Careers (PROTEC) www.protec.org.za

Project Build www.projectbuild.org.za

Project for Conflict Resolution and Development www.pcrd.org.za

Project Literacy www.projectliteracy.org.za

Quadriplegic Association of South Africa (QASA) www.qasa.co.za

Quaker Peace Centre www.quaker.org/capetown/

Rape Crisis Centre www.rapecrisis.org.za

Reach for a Dream Foundation www.reachforadream.org.za

Read Educational Trust www.read.org.za

Readucate www.teachingtoread.com/pages/ProfileReaducate.htm

Rehoboth Children's Village www.rehoboth.org.za

Residentia Foundation www.residentia.co.za/

Resources Aimed at the Prevention of Child Abuse and Neglect (RAPCAN) www.rapcan.org.za

Restorative Justice Centre www.rjc.co.za

Responsible Action and Leadership Initiative (RALI) www.raliyouth.org.za

R.o.c.k. Foundation www.rock.org.za

Rotary Africa www.rotaryafrica.za.org

Rural Doctors Association of Southern Africa (RUDASA) www.rudasa.org.za

Rural Economic Development Initiative (REDI)www.redi.org.za

Rural Legal Trustwww.rlt.org.za

SAIF: Education & Trainingwww.saifundraising.org.za/SAIFe&tmain.htm

SA Red Cross Air Mercy Service <http://www.ams.org.za/>

SaferAfricawww.saferfrica.org

Savings and Credit Cooperative League of SA (SACCOL)www.saccol.org.za

SBP (former Small Business Project)www.sbp.org.za

SchoolNet South Africawww.school.za

Scientific and Industrial Leadership Initiative (SAILI)www.saili.org.za

Shepherd's Keepwww.shepherdskeep.org.za

Sinani / KwaZulu-Natal Programme for Survivors of Violencewww.survivors.org.za

Small Enterprise Foundation (SEF)www.sef.co.za

Social Change Assistance Trust (SCAT)www.scat.org.za

Social Housing Foundation (SHF)www.shf.org.za

Solidarity Peace Trustwww.solidaritypeacetrust.org.za

Sonlife South Africawww.sonlife.org.za

SOS Children's Villages of South Africa<http://www.sos.org.za/>

Soul City www.soulcity.org.za

South Africa Foundationwww.safoundation.org.za

South African Abused Children's Fundwww.saabusedchildren.org

South African Business Coalition on HIV/AIDSwww.redribbon.co.za

South African Centre for Missing and Exploited Children (SACMEC)www.missingkids.co.za

South African Congress for Early Childhood Developmentwww.sacecd.org.za

South African Council for Social Service Professions (SACSSP)www.sacssp.org.za

South African Council of Churches (SACC)www.sacc.org.za

South African Guide-Dogs Association www.guidedog.org.za

South African Homeless People's Federationwww.dialogue.org.za

South African Institute for Distance Education (SAIDE)www.saide.org.za

South African Institute of International Affairs (SAIIA)www.saiia.org.za

South African Institute of Race Relations (SAIRR)www.sairr.org.za

South African National Blood Servicewww.sarbs.org.za

South African National Council for the Blindwww.sancb.org.za

South African National Council on Alcohol and Drug Dependence (SANCA)www.sancanational.org.za

South African National Editors' Forum (SANEF)www.sanef.org.za

South African New Economics Network (SANE)www.sane.org.za

South African NGO Coalition (SANGOCO)www.sangoco.org.za

South African Red Cross Societywww.redcross.org.za

South African Reference Group on Women in Science and Technology (SARG)www.sarg.org.za

South African Society for the Prevention of Child Abuse and Neglectwww.saspcan.org.za

South African YMCAwww.saymca.org.za

South African Youth Council (SAYC)www.sayc.org.za

Southern Africa Communications for Development (SACOD)www.sacod.org.za

Southern African Catholic Bishops Conference (SACBC)www.sacbc.org.za

Southern African Foundation for the Rehabilitation of Coastal Birds (SANCCOB)www.sanccob.co.za

Southern African Grantmakers Association (SAGA)www.donors.org.za

Southern African Institute of Fundraising (SAIF) <http://www.saifundraising.org.za>

Southern African NGO Network (SANGONeT)www.sangonet.org.za

Southern African Wildlife College www.wildlifecollege.org.za

Southern Cape Land Committee (SCLC)www.nlc.co.za/sclc

Speakoutwww.speakout.org.za

St Philomena's Children Homewww.stphils.org.za

Students' Health & Welfare Centres Organisation (SHAWCO)www.shawco.org

Sunflower Fundwww.sunflowerfund.org.za

Surplus Peoples Projectwww.spp.org.za

Sustainable Energy Africawww.sustainable.org.za

Sustainable Energy Society of Southern Africa (SESSA)www.sessa.org.za

Tembaletu Community Education Centrewww.tembaletu.co.za

Thandanani Children's Foundationwww.thandanani.org.za

The Edge Institutewwww.the-edge.org.za

The Haven Night Shelterwww.haven.org.za

The Love of Christ Ministrieswww.tlc.org.za

The Mvula Trustwww.mvula.co.za

The Rural Action Committee (TRAC)www.nlc.co.za/trac

The Salvation Army www.salvationarmy.org.za

The Shuttleworth Foundationwww.tsf.org.za

The Valley Trust www.thevalleytrust.org.za

Themba Lesizwe - South African Network of Trauma Service Providers www.santsep.co.za

Thembalitsha <http://www.thembalitsha.org.za>

Thusanang Development and Training www.thusanang.co.za

Thusanani Children's Foundation www.thusanani.org.za/

Topsy Foundation www.topsy.org.za

Trade and Industrial Policy Strategies (TIPS) www.tips.org.za

Transkei Land Service Organisation (TRALSO) www.tralso.co.za

translate.org.za www.translate.org.za

Trauma Society of South Africa www.traumasa.co.za

Treatment Action Campaign (TAC) www.tac.org.za

TREE - Early Childhood Development www.tree-ecd.co.za

Trevor Huddleston CR Memorial Centre www.trevorhuddleston.org

Triple Trust Organisation (TTO) www.tto.org.za

Trust for Community Outreach and Education (TCOE) www.tcoe.org.za

Tswane Place of Safety www.placeofsafety.org.za

Tshwaranang Legal Advocacy Centre (TLAC) www.tlac.org.za

uMmephi www.umephi.org

Ungana-Afrika www.ungana-afrika.org

Vervet Monkey Foundation www.enviro.co.za

Visionaries in Action Across Africa www.volunteer.co.za

Vuka Trust www.vukatrust.co.za

Vusabantu AIDS Project www.vusabantu.org

VIA Africa www.viaafrica.org

Vision Africa Foundation for Abstinence and Behavioural Change www.vision-africa.co.za

Volunteer Child Network www.volunteerchildnetwork.org.za

Volunteer Southern Africa www.volunteersa.co.za

War Against Malnutrition, Tuberculosis and Hunger (WARMTH) www.warmth.org.za

Warmth www.warmth.org.za

Western Cape Network on Violence Against Women www.westerncapenetwork.co.za

Western Cape Networking AIDS Community of South Africa www.wc-nacosa.co.za

Wildlife and Environment Society of South Africa (WESSA) www.wildlifesociety.org.za

Willing Workers in South Africa (WWISA) www.wwisa.co.za

Wola Nani www.wolanani.co.za

Women for Housing www.womenforhousing.org.za

Women of Vision www.womenofvision.org.za

Women on Farms Project www.wfp.org.za

Women's Legal Centre www.wlce.co.za

Women's Net www.womensnet.org.za

World Primate Sanctuary www.worldprimatesanctuary.org.za

World Wide Fund for Nature South Africa www.panda.org.za

Youth Development Network (YDN) www.ydn.org.za

Youth Development Trust (YDN) www.ydt.org.za

Youth for Christ South Africa www.yfc.org.za

Zanempilo www.zanempilo.org.za

Zanokhanyo www.zanokhanyo.org.za

Zenex Foundation www.zenexfoundation.org.za

Zulu Missions www.zulumissions.com

Appendix H

Internet backbone and international gateway operators

Internet backbone and international gateway operators

Sourced (CCK 2005:1) from:

www.cck.go.ke/html/speech.asp?speechid

Additional players in the Internet Backbone and International Gateway market segment have been licensed to compete with the incumbent, Jambonet. They include:

- Kenya Data Network (KDN), and
- Jamii Telecoms
- Fast Lane Ltd
- Simbanet.COM Ltd
- Skyweb Technologies Ltd
- UUNET Kenya Ltd
- Pan African Communications Network (K) Ltd
- Communications Solutions Ltd, and
- VSAT Kenya Ltd

Commercial VSAT Operators

AfSAT Communications, on the other hand, has been licensed as a Commercial VSAT Operator to compete with the existing two operators (namely Telkom Kenya and Alldean Satellite Network).

Appendix I

List of South African ISPs

<http://www.ispmap.org.za/searchisp.php>

Accessed 30/08/06

Company	Web site	Telephone
24-7 Internet Services	http://www.24-7.co.za/	+27 (0)11 658-1810
ABSA	http://www.absamail.co.za/	0860 166 177
Absol	http://www.absol.co.za/	+27 (0)12 365-2142
Adept	http://www.adept.co.za/	086 11 33 55 7
AlbanyNet	http://www.albanynet.co.za/	+27 (0)46 622 3893
ALTO Network Communications (Pty) Ltd	http://www.altonet.co.za/	0860 665 463
Amoeba Business Solutions t/a ITSolv	http://www.itsolv.net/	+27 (0)21 785-1424
artslink.co.za	http://www.artslink.co.za/	+27 (0)82 230-2255
AST Group	http://www.ast.co.za/	+27 (0)12 675-5000
AT&T SA	http://www.atbusiness.net/	+27 (0)11 217-4444
Atlantic Internet Services	http://lantic.net/	+27 (0)12 366-9500
BASPnet	http://www.baspnet.net/	+27 (0)21 872-7687
BCS-Net	http://www.bcsnet.co.za/	+27 (0)11 353-3000
Bidvest Network Solutions	http://www.ifusion.co.za/	0860 555 888
BlackDot IT Solutions	http://www.blackdot.co.za/	+27 (0)11 315-5445
Bucknet Internet	http://www.bucknet.co.za/	0861 101 967
CMC Networks	http://www.cmcnetworks.co.za/	+27 (0)11 517-8400
Commercial Internet Solutions	http://www.ein.co.za/	+27 (0)43 722-6625
CompuDoc	http://www.compuDoc.co.za/	+27 (0)31 465-9009
Compute Corporate Technology Solutions	http://www.compute.co.za/	+27 11 792-3156
Crystal River Corporation	http://www.crc.co.za/	+27 (0)21 761 9630
CyberSmart	http://www.cybersmart.co.za/	+27 (0)21 461-0014
DataPro	http://www.datapro.co.za/	+27 (0)11 809-1500
DigitalHost	http://www.digitalhost.co.za/	0861 DIGITAL
Direct Data	http://www.directdata.co.za/	+27 (0)73 220-2940
DiscoveryWorld Internet Access	http://www.discoveryworld.co.za/	0860 100 696
East Coast Access	http://www.eastcoast.co.za/	+27 (0)31 666-8080
EastCapeNet	http://www.eastcapenet.co.za/	+27 (0)48 881 1678
Eiect	http://www.eiect.co.za/	0861 135 328
Electronic Laboratory Services	http://www.elab.co.za/	+27 (0)11 358-0611
EndorphinWeb	http://www.ew.co.za/	+27 (0)31 765-4949
eNetworks cc	http://www.enetworks.co.za/	+27 (0)21 421-9857
Ensync Business Solutions (Pty) Ltd	http://www.ensync.co.za/	+27 (0)11 315 7015
FinSource Group	http://www.finsolutions.co.za/	+27 (0)21 480 8600
First in Business Solutions (PTY) Ltd	http://www.storage.co.za/	+27 (0)11 787 3655
Frogfoot Networks	http://www.frogfoot.net/	0860 537648
FutureNet	http://www.futurenet.co.za/	+27 (0)33 342-8870
GamCo	http://www.gam.co.za/	+27 (0)11 312-0481
Gateway Internet Solutions	http://www.gin.co.za/	+27 (0)21 683 5445
Hetznet CC t/a Hetzner Africa	http://www.hetzner.co.za/	+27 (0)21 970-2000
ICOZA	http://www.iccoza.co.za/	+27 (0)11 880-0101
Imagine	http://www.imagine.co.za/	+27 (0)11 214 7600
Imaginet Internet Services	http://www.imaginet.co.za/	+27 (0)46 622-3807

Infosat	http://www.infosat.co.za/	+27 (0)11 691 7000
InLoco Online Marketing & Client Service	http://www.inloco.co.za/	+27 (0)11 465-7557
Integr8 IT	http://www.integr8it.com/	0861 888 888
Integrated Technologies (Pty) Ltd t/a chillibyte.com	http://www.chillibyte.com/	086 11 00 409
Interexcel	http://www.interexcel.co.za/	+27 (0)12 346-1685
Internet Exchange	http://www.inx.co.za/	0867 277 770
Internet Partners	http://www.ipartners.co.za/	+27 21 421 0868
Internet Services and Technology	http://www.isat.co.za/	+27 (0)41 581-6999
Internet Shoppe	http://www.ishoppe.co.za/	+27 (0)12 374-2015
Internet Solutions	http://www.is.co.za/	+27 (0)11 575-1000
internet-sa	http://www.internet-sa.co.za/	0861 111 688
Internext	http://www.internext.co.za/	+27 (0)57 357-1184
Interprise	http://www.interprise.co.za/	0861 17 17 17
Intoweb Design	http://www.intoweb.co.za/	+27 (0)12 348-5320
ION Access	http://www.ion.co.za/	+27 (0)31 204-8000
Isoco	http://www.isoco.co.za/	+27 (0)35 789 0100
iSpace	http://www.ispace.co.za/	0860 477 477
Jantar ISP	http://www.jantar.co.za/	+27 (0)17 638-0137
Keyaka Weblink	http://www.kwl.co.za/	0861 590 590
Kingdom ISP	http://www.kingdom.co.za/	+27 (0)21 785-1977
Kingsley Technologies	http://www.kingsley.co.za/	+27 21 762 0276
KulWeb	http://www.kulweb.co.za/	+27 (0)11 789 1987
M-Web	http://www.mweb.co.za/	08600 32000
M-Web Connect (Pty) Ltd t/a Polka	http://www.polka.co.za/	0860 00 44 55
MacroLan	http://www.macrolan.co.za/	+27 (0)21 426-5189
Maxitec Internet Services	http://www.maxitec.co.za/	+27 (0)28 313 2596
MegaWeb Internet Services	http://www.megaweb.co.za/	+27 (0)11 485-1984
Melange	http://www.melange.co.za/	+27 11 372 9800
MetroWeb	http://www.metroweb.co.za/	+27 (0)11 675 2200
Mexcom (PTY) Ltd	http://www.mexcom.co.za/	+27 (0)11 791-7975
MICS Online	http://www.mics.co.za/	08600 22688
Mindspring Computing	http://www.mindspring.co.za/	+27 (0)21 657-1780
MJVnet	http://www.mjvn.co.za/	0861 658 638
MTN Network Solutions	http://www.mtnns.net/	+27 (0)11 280 0860
Namitech	http://www.namitech.com/	+27 (0)11 458-0000
NetConnect (CT)	http://www.netconnect.co.za/	+27 (0)21 448-1777
NetConnect (PE)	http://www.netcon.co.za/	(041) 365-0465
Netline	http://www.netline.co.za/	086 1 22 333 4
NetPoint	http://www.netpoint.co.za/	+27 (0)21 762 2276
Netr@link	http://www.netralink.com/	0860 223 638
Netsurit	http://www.netsurit.com/	+27 (0)11 444 3150
Network & Computing Consultants	http://www.ncc.co.za/	0861 555 444
NetWorld	http://www.new.co.za/	+27 (0)21 419-4430
Nexgen Communications	http://www.nqcom.co.za/	0861 639 436
Nexus Online	http://www.nol.co.za/	+27 (0)12 348-4280
Obsidian Systems	http://www.obsisp.net/	+27 (0)11 792 6600
Oryx Trust	http://www.oryx.co.za/	+27 (0)42 296-0003
Ovation	http://www.ovation.co.za/	+27 (0)11 678-7070
PCB Technologies	http://www.pcb.co.za/	+27 (0)11 880-9999

Penta Net	http://www.penta-net.co.za/	+27 (0)13 932-4547
Posix	http://www.posix.co.za/	+27 (0)12 807-0590
Raxel Internet	http://www.raxel.co.za/	+27 11 482 2547
RSASWeb Internet Services	http://www.rsaweb.co.za/	+27 (0)21 462-6798
SA Domain Internet Services	http://www.sadomain.co.za/	+27 (0)21 461-3490
Sainet	http://www.sainet.co.za/	0861 724 638
SANGONeT	http://www.sn.apc.org/	+27 (0)11 403-4935
SatWeb	http://www.satweb.co.za/	+27 (0)33 344 3455
SchoolNet SA	http://www.school.za/	+27 (0)11 645-6400
Sentech	http://www.sentech.co.za/	+27 (0)11 215 7343
Shisas	http://www.shisas.co.za/	0860 66 00 66
SS Workgroup Solutions	http://www.ssws.co.za/	+27 (0)12 657 0332
Storm	http://www.storm.co.za/	+27 (0)11 202-3000
Sybaweb Internet	http://www.sybaweb.co.za/	+27 (0)21 683-3141
Syscom Internet Services	http://www.syscom.co.za/	+27 (0)21 530 5730
T-SOL	http://www.tsol.co.za/	+27 (0)31 303-1531
Technology Concepts	http://www.techconcepts.co.za/	+27 (0)11 803 2169
Telkom Internet	http://www.telkominternet.co.za/	0800 500 200
Telkom SAIX	http://www.saix.net/	0800 222 772
Tenet	http://www.tenet.ac.za/	+27 (0)21 659 7140
The Corporate Internet	http://www.tci.co.za/	+27 (0)12 997 6512
The SA Internet	http://www.sai.co.za/	+27 (0)31 566-6300
Tiscali	http://www.tiscali.co.za/	0860 00 56 56
TradePage	http://www.tradepage.net/	+27 (0)31 701-0855
Uniform	http://co.za/	+27 (0)11 314-0077
UUNET Bandwidth Barn	http://bandwidthbarn.org/	+27 (0)21 409-7000
Verizon Business	http://www.verizonbusiness.co.za/	+27 (0)21 658-8700
Wardata (Pty) Ltd	http://www.wardata.com/	+27 (0)33 345 6789
WebAfrica	http://www.webafrica.co.za/	0861 555 222
WebMail	http://www.webmail.co.za/	+27 (0)82 234 3425
Webonline (PTY) LTD	http://www.webonline.biz/	0861 666 555
Western Cape Schools Network	http://www.wcsn.org.za/	+27 (0)21 683 8719
XM Solutions	http://www.xms.co.za/	+27 (0)11 807 8789
Xnet Internet Services	http://www.xnet.co.za/	+27 (0)11 867-5888
XSinet	http://xsinet.co.za/	+27 (0)21 970-4884
Xtranet Internet Services	http://www.xtranet.co.za/	+27 31 205-2490
Y Net Internet Service	http://www.yworld.co.za/	0861 936 477
ZAnet Internet Services	http://www.zanet.co.za/	+27 (0)11 465-0700
Zomerlust Systems Design	http://www.zsd.co.za/	+27 (0)21 683-1388
ZuluCom	http://www.zulucom.co.za/	+27 (0)35 792-1422
132 Matches found		Home
Company	Web site	Telephone
24-7 Internet Services	http://www.24-7.co.za/	+27 (0)11 658-1810
ABSA	http://www.absamail.co.za/	0860 166 177
Absol	http://www.absol.co.za/	+27 (0)12 365-2142
Adept	http://www.adept.co.za/	086 11 33 55 7
AlbanyNet	http://www.albanynet.co.za/	+27 (0)46 622 3893
ALTO Network Communications (Pty) Ltd	http://www.altonet.co.za/	0860 665 463
Amoeba Business Solutions t/a ITSolv	http://www.itsolv.net/	+27 (0)21 785-1424

artslink.co.za	http://www.artslink.co.za/	+27 (0)82 230-2255
AST Group	http://www.ast.co.za/	+27 (0)12 675-5000
AT&T SA	http://www.attbusiness.net/	+27 (0)11 217-4444
Atlantic Internet Services	http://lantic.net/	+27 (0)12 366-9500
BASPnet	http://www.baspnet.net/	+27 (0)21 872-7687
BCS-Net	http://www.bcsnet.co.za/	+27 (0)11 353-3000
Bidvest Network Solutions	http://www.ifusion.co.za/	0860 555 888
BlackDot IT Solutions	http://www.blackdot.co.za/	+27 (0)11 315-5445
Bucknet Internet	http://www.bucknet.co.za/	0861 101 967
CMC Networks	http://www.cmcnetworks.co.za/	+27 (0)11 517-8400
Commercial Internet Solutions	http://www.ein.co.za/	+27 (0)43 722-6625
CompuDoc	http://www.compuDoc.co.za/	+27 (0)31 465-9009
Compute Corporate Technology Solutions	http://www.compute.co.za/	+27 11 792-3156
Crystal River Corporation	http://www.crc.co.za/	+27 (0)21 761 9630
CyberSmart	http://www.cybersmart.co.za/	+27 (0)21 461-0014
DataPro	http://www.datapro.co.za/	+27 (0)11 809-1500
DigitalHost	http://www.digitalhost.co.za/	0861 DiGiTAL
Direct Data	http://www.directdata.co.za/	+27 (0)73 220-2946
DiscoveryWorld Internet Access	http://www.discoveryworld.co.za/	0860 100 696
East Coast Access	http://www.eastcoast.co.za/	+27 (0)31 566-8080
EastCapeNet	http://www.eastcapenet.co.za/	+27 (0)48 881 1678
Eiect	http://www.eiect.co.za/	0861 135 328
Electronic Laboratory Services	http://www.elab.co.za/	+27 (0)11 358-0611
EndorphinWeb	http://www.ew.co.za/	+27 (0)31 765-4949
eNetworks cc	http://www.enetworks.co.za/	+27 (0)21 421-9857
Ensync Business Solutions (Pty) Ltd	http://www.ensync.co.za/	+27 (0)11 315 7015
FinSource Group	http://www.finsolutions.co.za/	+27 (0)21 480 8600
First in Business Solutions (PTY) Ltd	http://www.storage.co.za/	+27 (0)11 787 3855
Frogfoot Networks	http://www.frogfoot.net/	0860 537648
FutureNet	http://www.futurenet.co.za/	+27 (0)33 342-8870
GamCo	http://www.gam.co.za/	+27 (0)11 312-0481
Gateway Internet Solutions	http://www.gin.co.za/	+27 (0)21 683 5445
Hetznet CC t/a Hetzner Africa	http://www.hetzner.co.za/	+27 (0)21 970-2000
ICOZA	http://www.icoza.co.za/	+27 (0)11 880-0101
Imagine	http://www.imagine.co.za/	+27 (0)11 214 7600
Imaginet Internet Services	http://www.imaginet.co.za/	+27 (0)45 622-3807
Infosat	http://www.infosat.co.za/	+27 (0)11 691 7000
InLoco Online Marketing & Client Service	http://www.inloco.co.za/	+27 (0)11 465-7557
Integr8 IT	http://www.integr8it.com/	0861 888 888
Integrated Technologies (Pty) Ltd t/a chillibyte.com	http://www.chillibyte.com/	086 11 00 409
Interexcel	http://www.interexcel.co.za/	+27 (0)12 346-1686
Internet Exchange	http://www.inx.co.za/	0867 277 770
Internet Partners	http://www.ipartners.co.za/	+27 21 421 0888
Internet Services and Technology	http://www.isat.co.za/	+27 (0)41 581-6999
Internet Shoppe	http://www.ishoppe.co.za/	+27 (0)12 374-2016
Internet Solutions	http://www.is.co.za/	+27 (0)11 575-1000
internet-sa	http://www.internet-sa.co.za/	0861 111 688
Internext	http://www.internext.co.za/	+27 (0)57 357-1184
Interprise	http://www.interprise.co.za/	0861 17 17 17

Intoweb Desian	http://www.intoweb.co.za/	+27 (0)12 348-5320
ION Access	http://www.ion.co.za/	+27 (0)31 204-8000
Isogo	http://www.isogo.co.za/	+27 (0)35 789 0100
iSpace	http://www.ispace.co.za/	0860 477 477
Jantar ISP	http://www.jantar.co.za/	+27 (0)17 638-0137
Keyaka Weblink	http://www.kwi.co.za/	0861 590 590
Kingdom ISP	http://www.kingdom.co.za/	+27 (0)21 785-1977
Kingsley Technologies	http://www.kingsley.co.za/	+27 21 762 0276
KulWeb	http://www.kulweb.co.za/	+27 (0)11 789 1987
M-Web	http://www.mweb.co.za/	08600 32000
M-Web Connect (Pty) Ltd t/a Polka	http://www.polka.co.za/	0860 00 44 55
MacroLan	http://www.macrolan.co.za/	+27 (0)21 426-5189
Maxitec Internet Services	http://www.maxitec.co.za/	+27 (0)28 313 2596
MegaWeb Internet Services	http://www.megaweb.co.za/	+27 (0)11 485-1984
Melange	http://www.melange.co.za/	+27 11 372 9800
MetroWeb	http://www.metroweb.co.za/	+27 (0)11 675 2200
Mexcom (PTY) Ltd	http://www.mexcom.co.za/	+27 (0)11 791-7975
MICS Online	http://www.mics.co.za/	08600 22688
Mindspring Computing	http://www.mindspring.co.za/	+27 (0)21 657-1780
MJVnet	http://www.mjvn.co.za/	0861 558 638
MTN Network Solutions	http://www.mtnns.net/	+27 (0)11 280 0860
Namitech	http://www.namitech.com/	+27 (0)11 458-0000
NetConnect (CT)	http://www.netconnect.co.za/	+27 (0)21 448-1777
NetConnect (PE)	http://www.netcon.co.za/	(041) 365-0465
Netline	http://www.netline.co.za/	086 1 22 333 4
NetPoint	http://www.netpoint.co.za/	+27 (0)21 762 2276
Netr@link	http://www.netralink.com/	0860 223 638
Netsurit	http://www.netsurit.com/	+27 (0)11 444 3150
Network & Computing Consultants	http://www.ncc.co.za/	0861 555 444
NetWorld	http://www.new.co.za/	+27 (0)21 419-4430
Nexgen Communications	http://www.nqcom.co.za/	0861 639 436
Nexus Online	http://www.nol.co.za/	+27 (0)12 348-4280
Obsidian Systems	http://www.obsisp.net/	+27 (0)11 792 6500
Oryx Trust	http://www.oryx.co.za/	+27 (0)42 296-0003
Ovation	http://www.ovation.co.za/	+27 (0)11 678-7070
PCB Technologies	http://www.pcb.co.za/	+27 (0)11 880-9999
Penta Net	http://www.penta-net.co.za/	+27 (0)13 932-4547
Posix	http://www.posix.co.za/	+27 (0)12 807-0590
Raxel Internet	http://www.raxel.co.za/	+27 11 482 2547
RSAWeb Internet Services	http://www.rsaweb.co.za/	+27 (0)21 462-6798
SA Domain Internet Services	http://www.sadomain.co.za/	+27 (0)21 461-3490
Sainet	http://www.sainet.co.za/	0861 724 638
SANGONeT	http://www.sn.abc.org/	+27 (0)11 403-4935
SatWeb	http://www.satweb.co.za/	+27 (0)33 344 3455
SchoolNet SA	http://www.school.za/	+27 (0)11 645-6400
Sentech	http://www.sentech.co.za/	+27 (0)11 215 7343
Shisas	http://www.shisas.co.za/	0860 66 00 66
SS Workgroup Solutions	http://www.ssws.co.za/	+27 (0)12 657 0332
Storm	http://www.storm.co.za/	+27 (0)11 202-3000

Sybaweb Internet	http://www.sybaweb.co.za/	+27 (0)21 683-3141
Syscom Internet Services	http://www.syscom.co.za/	+27 (0)21 530 5730
T-SOL	http://www.tsol.co.za/	+27 (0)31 303-1531
Technology Concepts	http://www.techconcepts.co.za/	+27 (0)11 803 2169
Telkom Internet	http://www.telkominternet.co.za/	0800 500 200
Telkom SAIX	http://www.saix.net/	0800 222 772
Tenet	http://www.tenet.ac.za/	+27 (0)21 659 7140
The Corporate Internet	http://www.tci.co.za/	+27 (0)12 997 6512
The SA Internet	http://www.sai.co.za/	+27 (0)31 566-6300
Tiscali	http://www.tiscali.co.za/	0860 00 56 56
TradePage	http://www.tradepage.net/	+27 (0)31 701-0855
Uniforum	http://co.za/	+27 (0)11 314-0077
UUNET Bandwidth Barn	http://bandwidthbarn.org/	+27 (0)21 409-7000
Verizon Business	http://www.verizonbusiness.co.za/	+27 (0)21 658-8700
Wandata (Pty) Ltd	http://www.wandata.com/	+27 (0)33 345 6789
WebAfrica	http://www.webafrica.co.za/	0861 555 222
WebMail	http://www.webmail.co.za/	+27 (0)82 234 3425
Webonline (PTY) LTD	http://www.webonline.biz/	0861 666 555
Western Cape Schools Network	http://www.wcsn.org.za/	+27 (0)21 683 8719
XM Solutions	http://www.xms.co.za/	+27 (0)11 807 8789
Xnet Internet Services	http://www.xnet.co.za/	+27 (0)11 867-5888
XSinet	http://xsinet.co.za/	+27 (0)21'970-4884
Xtranet Internet Services	http://www.xtranet.co.za/	+27 31 205-2490
Y Net Internet Service	http://www.yworld.co.za/	0861 936 477
ZAnet Internet Services	http://www.zanet.co.za/	+27 (0)11 465-0700
Zomerlust Systems Design	http://www.zsd.co.za/	+27 (0)21 683-1388
ZuluCom	http://www.zulucom.co.za/	+27 (0)35 792-1422
132 Matches found		Home

Appendix J

Workplan

Work Plan.

	Activity/Event	Months											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Year 2003												
1.	Proposal: Development & Presentation												
2.	Chapter 1: Introduction & Background												
3.	Chapter 2: Audit and Mapping of ICTs amongst women in Kenya & South Africa												
	Year 2004												
	Chapter 2: Audit and Mapping of ICTs amongst women in Kenya and South Africa												
4.	Chapter 3: Conceptions of Information needs and information seeking behavior and information use												
	Chapter 4: Theoretical Framework												
5.	Chapter 5: Gender ICTs and Development												
5.	Chapter 6: Research Methods and Research Instruments; Pre-testing of instrument (<i>liana</i>)												
	Year 2005												
6.	Chapter 6: Research Methods and Research Instrument												
7.	Field Work in Kenya (including Case Study)												
8.	Field Work in South Africa												
	Year 2006												
9.	Chapter 7: Data Presentation and Analysis												
10.	Field work in South Africa (Case Study)												
11.	Chapter 8: Data Analysis and Presentation (Case Studies for Kenya and South Africa)												
12.	Chapter 9: Discussion and Findings												
13.	Chapter 10: Summary Conclusions and Recommendations												
	Year 2007												
14.	Theses Corrections and Submission												
15.	Graduation												

Appendix K

Draft ICT Advert for Kenya

REPUBLIC OF KENYA



MINISTRY OF INFORMATION AND COMMUNICATIONS

DRAFT ICT POLICY

Following the release of the draft National ICT Policy by the Honourable Minister for Information and Communications, all ICT Stakeholders are informed that the deadline for submitting comments on the draft ICT policy has been extended to 10th March 2005. The policy is available for downloading at <http://www.information.go.ke>.

The policy provides a vision for creating an e-enabled and knowledge-based society by using ICTs to improve the livelihoods of Kenyans and to optimize its contribution to the development of the economy through the availability of efficient, reliable and affordable info-communication services throughout the country.

The policy spells out the priority goals and objectives that will harness the potential of the ICTs to achieve the Millennium Development Goals i.e improvement of living standards; achievement of universal primary education; promotion of gender equality and empowerment of women; reduction of child mortality; improvement of maternal health; combating diseases; ensuring environmental sustainability; enhancing agricultural productivity and food security; and developing national and global partnerships in ICTs for overall socio-economic development.

The policy recognizes that young people are the future workforce and leading creators and earliest adopters of ICTS. It aims to empower them as learners, developers, contributors, and future entrepreneurs/decision-makers. It recognizes the enormous opportunities that ICTs can provide for women, who should be an integral part of and key actors in the new information society. It also recognises the plight of the bulk of the population who reside in the rural areas and seeks to ensure that they have an opportunity to participate in the evolving information society.

The policy covers information technology, telecommunications, postal, broadcasting and radio spectrum. The institutional framework proposed assumes converged regulatory, policy and dispute resolution regime. The policy framework is based on the COMESA Model ICT policy which was adopted by the COMESA Council of Ministers in March 2003.

ENG. JAMES REGE
PERMANENT SECRETARY
MINISTRY OF INFORMATION & COMMUNICATIONS
P.O. BOX 30025-00100
E-mail: kenyaictpolicy@yahoo.co.uk
NAIROBI